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BULLETIN No. 92
BIOLOGICAL SERIES No. 24

**BOTANY OF THE CANADIAN
EASTERN ARCTIC**

**PART I
PTERIDOPHYTA AND SPERMATOPHYTA**

BY

Nicholas Polunin



Price, \$1

1940

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DEPARTMENT OF MINES AND TECHNICAL SURVEYS

REPORT OF THE COMMISSIONER OF MINES AND TECHNICAL SURVEYS

FOR THE YEAR 1900

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PART I

MINERAL RESOURCES AND MINING INDUSTRIES

FOREWORD

The Canadian Eastern Arctic is perhaps less known botanically than any other area of comparable magnitude on the face of the earth. The present series of floristic and ecological reports aims at remedying this deficiency. It comprises:

Part I. Pteridophyta and Spermatophyta.

Part II. Thallophyta and Bryophyta.

Part III. Vegetation and Ecology.

Part IV. Subarctic Regions.

Parts I-III are concerned with practically the whole of eastern North America, excluding Greenland, that lies east of longitude 95 degrees west and north of latitude 60 degrees north. Part IV covers a belt approximately 150 miles wide lying directly south of the 60th parallel, and stretching from the Atlantic coast of Labrador to the west shore of Hudson Bay. Parts I, III, and IV are the outcome of my own labours during the past 7 years; for these parts I must take all responsibility. In the preparation of Part II I have, however, had the active collaboration of seven leading specialists in Europe and America, viz., Professor A. W. Evans of Yale University (Hepaticae), Dr. D. H. Linder of Harvard University (Fungi), Professor B. Lynge of Oslo (Lichenes), Mr. R. Ross of the British Museum (Fresh-water Diatomeae), Mr. G. Seidenfaden of Copenhagen (Marine Phytoplankton), Professor W. C. Steere of the University of Michigan (Musci), and Dr. R. M. Whelden of Harvard University (other Algae).

Even where the work is no more than a preliminary survey it is hoped that it will afford suggestions and act as a stimulus for future exploration.

Nicholas Polunin

Herbarium, Department of Botany, Oxford University, England,
June 1, 1938.

FOREWORD

The American Fisheries Society is pleased to present this volume to the members of the Society and to the public. It is a volume of the series of the American Fisheries Society, which is published by the American Fisheries Society, Inc., 1415 K Street, N.W., Washington, D.C. 20004.

- Part I. Fisheries and Fisheries Management
- Part II. Fisheries and Fisheries Management
- Part III. Fisheries and Fisheries Management
- Part IV. Fisheries and Fisheries Management

Part I. Fisheries and Fisheries Management. This part of the volume is devoted to the study of the fisheries of the United States. It is a volume of the series of the American Fisheries Society, which is published by the American Fisheries Society, Inc., 1415 K Street, N.W., Washington, D.C. 20004.

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Part I

PTERIDOPHYTA AND SPERMATOPHYTA

INTRODUCTION

GEOGRAPHY

This Flora attempts to cover all land in Canada lying north of the 60th parallel of latitude and east of longitude 95 degrees west, with the exception of Axel Heiberg Island, Boothia Peninsula, and the inland parts of Keewatin. The region thus delimited comprises the most northerly parts of Labrador and Quebec, the northwest coast of Hudson Bay, Melville Peninsula, and the islands of the eastern half of the Arctic Archipelago—in all about 420,000 square miles of land. It is admittedly not an ideal entity for phytogeographical consideration; but being nearly triangular it still stands out as a very fair one, which moreover could not be bettered considering the data available from expeditions prior to 1936 when I commenced writing this report. It also has the advantage of conformity with the Northwest and Yukon Territories in being cut off along the 60th parallel of north latitude, and in slightly overlapping in the extreme southwest the area that is being considered by Mr. A. E. Porsild in his forthcoming Flora of the Western Subarctic regions of Canada.

This Eastern Arctic area as I have defined it for the purpose of the present series will hereafter for short be most frequently termed "the" or "our" area. Except that it excludes Hebron (Labrador), Port Harrison (Quebec), Churchill (Manitoba), and other less important points of call lying south of the 60th parallel, it is essentially the area that is now patrolled annually by the Canadian Eastern Arctic Expedition, and which has accordingly in departmental parlance come to be known as "The Eastern Arctic".

The accompanying map (Figure 1) illustrates how our area, again merely for the purpose of the present series, has been subdivided into ten major districts as follows:

1. Ellesmere.
2. Devon, Cornwallis, and Somerset Islands.
3. Northern Baffin.
4. Central Baffin.
5. Southern Baffin.
6. Melville Peninsula.
7. Northernmost Labrador.
8. Northern Quebec.
9. Islands in Hudson and Ungava Bays.
10. West coast of Hudson Bay (Keewatin).



Figure 1. Sketch map showing subdivisions of the Canadian Eastern Arctic as follows: (1) Ellesmere; (2) Devon, Cornwallis, and Somerset Islands; (3) northern Baffin; (4) central Baffin; (5) southern Baffin; (6) Melville Peninsula; (7) northernmost Labrador; (8) northern Quebec; (9) islands in Hudson and Ungava Bays; (10) west coast of Hudson Bay (Keewatin).

A brief account of each of these ten major districts will now be given, followed in every case by a list of all the minor districts and localities mentioned in the present volume. These districts and localities are given in the order (from north to south and then east to west) in which they generally appear in the citations of records of each species. The latitudes and longitudes given are of necessity often only approximate, but they will at least facilitate reference to the position on the detailed map (Map 558A). For phytogeographical purposes, and regardless of political boundaries, small islands are in most cases cited with the adjacent mainland to which they seem rightly to belong.

(1) *Ellesmere*

This is the third largest island of the Canadian Arctic Archipelago. It has an area of approximately 75,024 square miles (Bethune 1935, p. 18), and so is nearly as large as England and Scotland combined. Most of the interior is, however, covered by ice-cap. Ellesmere stretches from 83°8' N., which is less than 500 miles from the North Pole, southwards to 76°8' N., and from about 61° to 92°30' W.

Grant Land c. 81°-83°8' N., 61°-92°30' W.

Cape Columbia 83°3' N., 69°30' W.

Ward Hunt Island: around 83°5' N. and 74°45' W.

Cape Discovery 82°57' N., 77°30' W.

Cape Joseph Henry 82°42' N., 63°30' W.

¹*Feilden Peninsula* 82°42-8' N., 63°30' W.

Egerton Valley 82°40' N., 63° W.

Cape Richardson 82°35' N.

Cape Sheridan 82°30' N., 62° W.

Dumbbell Harbour (Bay) 82°28' N., 62° W.

Floeberg Beach 82°27' N., 61° W.

Lake Hazen Valley: around 81°40' N. and 70° W.

Grinnell Land—central portion of Ellesmere

Shift Rudder Bay 81°50' N., 63°30' W.

Cartmel Point (Mount Cartmel?) 81°45' N., 63° W.

St. Patricks Bay 81°45' N., 64° W.

Lady Franklin Bay c. 81°-81°44' N., 64°-70° W.

Discovery Harbour (near Fort Conger) 81°43' N., 64°45' W.

Cape Murchison 81°43' N., c. 65° W.

Bellot Island 81°40' N., 65° W.

Musk-ox Bay 81° 40' N., 66°30' W.

Radmore Harbour 80°22' N., 70°30' W.

Richardson Bay c. 80°10' N., 70° W.

Cape Frazer 79°45' N., 71°30' W.

Dobbin Bay 79°48' N., 74°00' W.

Franklin Pearce Bay 79°28' N., 75° W.

Walrus (Norman Lockyer) Island 79°23' N., 74°30' W.

¹ Names in italics are not shown on the map (in pocket) and have not been passed by the Canadian Geographic Board. In such cases the latitude and longitude given are only approximate.
69028-2

Hayes Sound region: around 79° N. and 77° W.

'Edwards Grief'

Bache Peninsula 79°9' N., 76°15' W.

Flagler Bay 79°5' N., 77°00' W.

Fort Juliane 79°3' N., 77° W.

Beitstad Fiord 79°2' N., 77°30'-79° W.

Buchanan Bay (*Turnestone Beach*) c. 78°41' N., 75°00' W.

Alexandra Fiord (*Haven?*) 78°48-57' N., 75°50'-76°50' W.

Skräling Island 78°53' N., 75°50' W.

Cape Viele 78°53' N., 75°50' W.

Eskimopolis (*Deserted Village*) 78°52' N., 75°30' W.

Lastraea Valley 78°52' N., 75°30' W.

Twin Glacier Valley 78°45-50' N., 76° W.

Cape Rutherford (*Rutherford Valleys?*) 78°49' N., 75° W.

Cocked Hat Island 78°48' N., 74°50' W.

Pim Island (*Bedford Pim Island*) 78°44' N., 74°30' W.

Rice Strait 78°42' N., 74°40' W.

Fram Harbour 78°45' N., 75° W.

Cape Sabine 78°42' N., 74°15' W.

Cape Isabella c. 78°20' N., 75° W.

Cape Faraday 77°35' N., 78° W.

South Coast (shore of Jones Sound) c. 76°20'-77° N., 79°-89°30' W.

Fram Fiord 76°20-25' N., 81°-81°30' W.

Craig Harbour 76°10' N., 80°56' W.

Harbour Fiord 76°25-40' N., 84°20-45' W.

Barren Valleys 76°37' N., 84°25' W.

Big Valley 76°28' N., 84°20' W.

Seagull Rock 76°28' N., 84°30' W.

Musk-ox Fiord 76°20-45' N., 87°30' W.

Goose Fiord 76°23-52' N., 88°40' W.

Ptarmigan Gorge 76°48' N., 88°40' W.

Falcon Cliff 76°29' N., 88°40' W.

Walrus Fiord 76°23-37' N., 88°50' W.

West Coast

Bay Fiord 78°57' N., 81°25'-85° W.

Stor (*Big*) Island: around 79° N. and 86° W.

Braskerud Plain 78°30' N., 82°30' W.

Baumann Fiord 77°20'-78°7' N., 83°30'-87°45' W.

Coal Bay 77°20' N., 83°30' W.

Eidsfjord 77°20' N., 87° W.

Nordstrand 76°58' N., 89° W.

Lands End 76°52' N., 89°30' W.

Hell Gate 76°23-50' N., 89°20' W.

Reindeer Cove 76°42' N., 89°15' W.

'Ptarmigan Hill'

(2) *Devon, etc., Islands*

The largest of this group is Devon Island, which has an area of about 20,484 square miles (Bethune 1935, p. 16). Like Ellesmere, its interior is largely covered by ice-caps. Next in size, to the southwest, comes Somerset Island, having an area of something under 10,000 square miles, and thirdly, Cornwallis Island (c. 2,592 square miles according to Bethune l.c.). Devon Island was previously called "North Devon" and Somerset Island "North Somerset". Considered with these larger islands are some smaller ones such as Graham Island and North Kent Island, the whole group extending from about 77°20' N. southwards to 72° N., and from 79°30' W. to 97°30' W.¹

Graham Island 77°10'-20' N., 90°40'-91°6' W.

Buckingham Island 77°10' N., 91°20' W.

North Kent Island 76°26'-50' N., 89°45'-90°30' W.

Devon Island 74°30'-77°5' N., 79°30'-97°00' W.

Devils Isle 76°29' N., 90°40' W.

Cape Vera 76°13' N., 89°25' W.

Castle Island 76°10' N., 89°20' W.

West Fiord 76°8' N., 90°10' W.

Boat Point (Cape) 76° N., 90°25' W.

Viks Fiord c. 75°55' N., c. 91° W.

Cape Sparbo (Hardy) 75°52' N., 84° W.

Cape Warrender 74°26' N., 81°44' W.

Dundas Harbour 74°35' N., 82°10' W.

Cuming Creek 74°30' N., 86° W.

Powell Creek 74°30' N., 86°15' W.

Caswalls Tower 74°47' N., 91° W.

Cape Riley 74°44' N., 91°20' W.

Beechy Island 74°44' N., 91°45' W.

'Northumberland Sound' (Inlet ?²) c. 76° 45' N., 96°15' W.

Mount Belcher 76°29' N., 90°54' W.

Baring Bay 75°40' N., 92° W.

Wellington Channel: around 75° N. and 93° W.

East side Wellington Channel c. 92°30' W.

Cornwallis Island 74°40'-75°35' N., 94°-97°30' W.

Assistance Bay 74°40' N., 94° W.

'Opposite Browne Island' c. 75° N., 96° W.¹

Somerset Island 72°-74°10' N., 90°-96° W.

Port Leopold 73°49' N., 90°14' W.

Elwyn Inlet (Bay) 73° 30' N., 91° W.

Prince Regent Inlet 73° N., 90° W.

Fury Beach (Point) 72°45' N., 92° W.

Cape Garry 72°13' N., 93°30' W.

Limestone Island 74°5' N., 95°30' W.

Port Kennedy 72° N., 94°30' W.

¹ Griffiths Island, lying between the western ends of Cornwallis and Somerset Islands, has been excluded from our area. Eleven species of vascular plants have so far been collected on it—cf. Simmons (1913, p. 25).

² Some of the plants that have been reported from here apparently came instead from Cumberland Gulf—cf. Polunin (1936b, p. 411).

(3) *Northern Baffin*

Baffin Island is approximately 1,000 miles long, having an estimated area of 201,600 square miles. After Australia and Greenland it is the largest "island" in the world. About one-third of its area may be cut off as the northern section by a line drawn in a southwesterly direction from a little north of Cape Adair on the east coast to the shore of Foxe Basin on the west. This district may most conveniently be allowed to include the ice-capped Bylot Island, which indeed on two sides is only separated by narrow straits from the mainland of Baffin, and has itself an area of some 5,000 square miles. The district so constituted extends from about $73^{\circ}50'$ N. southwards to $69^{\circ}30'$ N., and from about 72° W. to 90° W.

Bylot Island $72^{\circ}45'$ - $73^{\circ}50'$ N., $76^{\circ}15'$ - $81^{\circ}00'$ W.

Possession Bay $73^{\circ}40'$ N., 77° W.

Button Point $72^{\circ}50'$ N., c. $76^{\circ}40'$ W.

Korokdjuak (*Koroqdjuaq*) c. $72^{\circ}50'$ N., 76° W.

Qaersut c. $72^{\circ}50'$ N., $77^{\circ}20'$ W.

Tuarpat c. 73° N., $77^{\circ}30'$ W.

Pond Inlet and vicinity (i.e., of the Hudson's Bay Company's trading post, although the citations often include one or more of the following five adjacent localities) $72^{\circ}43'$ N., $77^{\circ}45'$ W.

Albert Harbour (*Igaqdjuaq*) $72^{\circ}45'$ N., $77^{\circ}40'$ W.

Qaersuarsuit "East of Mitimatalik"

Mitimatalik " $72^{\circ}45'$ " N.

Qilalukan " $72^{\circ}40'$ lat. N.W. of Mitimatalik"

Tulukan (*Too-loo-kan*) $72^{\circ}35'$ N., $78^{\circ}40'$ W.

Navy Board Inlet: around 73° N. and 81° W.

Qorlortoq in Milne Inlet $72^{\circ}5'$ N., $81^{\circ}35'$ W.

Admiralty Inlet 71° - 74° N., around $85^{\circ}30'$ W.

Strathcona Sound c. $73^{\circ}15'$ N., 84° W.

Arctic Bay $73^{\circ}5'$ N., 84° W.

Red Valley $72^{\circ}30'$ N., c. 85° W.

Fabricius Fiord $72^{\circ}15'$ N., $84^{\circ}30'$ W.

Imeq c. $71^{\circ}15'$ N., 84° W.

Saputit $70^{\circ}55'$ N., $84^{\circ}40'$ W.

Port Bowen $73^{\circ}15'$ N., 89° W.

Murray Maxwell Bay: around 70° N. and 80° W.

Tern Island $69^{\circ}30'$ N., 81° W.

Gifford River: around 70° N. and 82° W.

Cape Griffith $69^{\circ}55'$ N., c. 82° W.

Cape Bøggild c. 70° N., 85° W.

Cape Hallowell 70° N., $85^{\circ}20'$ W.

Nyeboes Fiord: around $72^{\circ}20'$ N. and $86^{\circ}30'$ W.

Foss Fiord $70^{\circ}25'$ N., 87° W.

(4) *Central Baffin*

This district is delimited on the north by a line drawn in a southwesterly direction from just north of Cape Adair to the west coast, and on the south by a line drawn from the point of intersection of the Arctic Circle

and the west coast to Neptune Bay (c. $64^{\circ} 30' N.$) on the east coast. It comprises rather more than one-third of the 201,600-odd square miles of Baffin and extends from about $71^{\circ} 30' N.$ southwards to $64^{\circ} 30' N.$, and from $61^{\circ} 10' W.$ to perhaps $76^{\circ} 1' W.$

'West side of Davis Strait'

Cape Adair $71^{\circ} 30' N.$, $71^{\circ} 30' W.$

Scott Inlet $71^{\circ} 10' N.$, $71^{\circ} W.$

(River) Clyde $70^{\circ} 26' N.$, $68^{\circ} 30' W.$

Isabella Bay c. $69^{\circ} 30' N.$, $68^{\circ} W.$

Kivitoo (*Kivitung*) $67^{\circ} 54' N.$, $65^{\circ} W.$

Cape Searle $67^{\circ} 20' N.$, $62^{\circ} 30' W.$

Exeter Sound $66^{\circ} 20' N.$, $62^{\circ} W.$

Cumberland Sound $64^{\circ} 15' - 66^{\circ} 30' N.$, $64^{\circ} 00' - 67^{\circ} 00' W.$

Ekaluakdjuin Bay c. $65^{\circ} 40' N.$, $65^{\circ} W.$

Kingnait (*Kingnite Fiord*): around $66^{\circ} N.$ and $65^{\circ} W.$

Winter (*American?*) *Harbour* $66^{\circ} N.$, $65^{\circ} W.$

Pangnirtung $66^{\circ} 6' N.$, $65^{\circ} 30' W.$

Niatolik (*Niatilik*, *Niatoling*) $65^{\circ} 50' N.$, $65^{\circ} W.$

Kekerten (*Kikkerton Island(s)*) $65^{\circ} 50' N.$, c. $65^{\circ} 40' W.$

Milikdjuak (*Midliattwack*, *Medleatwak*) *Islands* $65^{\circ} 30' N.$, $65^{\circ} 30' W.$

Blacklead Island $65^{\circ} 2' N.$, $66^{\circ} 7' W.$

Kassigidjen Fiord c. $64^{\circ} 45' N.$, $66^{\circ} W.$

Kingua Fiord (including *Dutch Polar Station*) $66^{\circ} 40' N.$, $67^{\circ} W.$

Nettilling Fiord: around $66^{\circ} N.$, $68^{\circ} W.$

'Quickstep Harbour'

'Keinooksooke (*Kennooksvooke*)'

Nettilling Lake: around $66^{\circ} 30' N.$ and $71^{\circ} W.$

Foxe Island(s) c. $66^{\circ} 20' N.$, c. $70^{\circ} W.?$

West Coast: around $74^{\circ} - 76^{\circ} 1' W.$

Koukdjuak River $66^{\circ} 48' N.$, $74^{\circ} W.$

Camp Kungovik $66^{\circ} 35' N.?$

(5) *Southern Baffin*

This includes all of Baffin lying south of a line drawn from the Arctic Circle ($66^{\circ} 33' N.$) on the west coast to Neptune Bay on the east coast, and also Loks Land, Resolution Island, and Big Island. The total land area is some 60,000 square miles, and the terrain extends from $66^{\circ} 33' N.$ southwards to about $61^{\circ} 25' N.$, and from $63^{\circ} 30' W.$ to $78^{\circ} 10' W.$

Cape Murchison $63^{\circ} 12' N.$, $64^{\circ} W.$

Cape Haven $63^{\circ} N.$, $64^{\circ} 30' W.$

Sinyah (*Siniyah*, *Signuia*) $62^{\circ} 55' N.$, $64^{\circ} 35' W.$

Loks Land $62^{\circ} 22' N.$, $64^{\circ} 30' W.$

¹This figure is very doubtful, as the west coast of Baffin is almost entirely unexplored.

Frobisher Bay $62^{\circ}30' - 63^{\circ}48' \text{ N.}, 65^{\circ} - 69^{\circ} \text{ W.}$

North shore Frobisher Bay: around $63^{\circ}30' \text{ N.}$ and $65^{\circ} - 69^{\circ} \text{ W.}$

Point Brewster "just north of Warwick Sound"

'*North of York Harbour*' c. $63^{\circ} \text{ N.}, 66^{\circ}40' \text{ W.}$

Ward Inlet: around $63^{\circ}30' \text{ N.}, 67^{\circ}30' \text{ W.}$

York Sound (Harbour) $62^{\circ}30' \text{ N.}, 66^{\circ}30' \text{ W.}$

'*Peterforce Sound*'

Resolution Island: around $61^{\circ}40' \text{ N.}$ and $64^{\circ}45' \text{ W.}$

Acadia Cove (Harbour ?) $61^{\circ}25' \text{ N.}, 64^{\circ}50' \text{ W.}$

South Coast (north shore of Hudson Strait) $62^{\circ} - 64^{\circ} \text{ N.}, 66^{\circ} - 78^{\circ} \text{ W.}$

Soper (Little Koukdjuak) River c. $63^{\circ} \text{ N.}, 69^{\circ}50' \text{ W.}$

Lake Harbour $62^{\circ}52' \text{ N.}, 69^{\circ}53' \text{ W.}$

Upper Savage Island(s) $62^{\circ}30' \text{ N.}, 70^{\circ} \text{ W.}$

Big Island $62^{\circ}40' \text{ N.}, 70^{\circ}30' \text{ W.}$

Ashe Inlet $62^{\circ}35' \text{ N.}, 70^{\circ}30' \text{ W.}$

Amadjuak Lake: around $64^{\circ}40' \text{ N.}$ and 71° W.

Amadjuak (*Bay*) $64^{\circ} \text{ N.}, 72^{\circ}40' \text{ W.}$

Chorkbak (*Tchark-bach*) Inlet $64^{\circ}45' \text{ N.}, 74^{\circ}20' \text{ W.}$

Andrew Gordon Bay (*Gordon Bay, including Fox Island*)
 $64^{\circ}30' \text{ N.}, 75^{\circ}30' \text{ W.}$

(Cape) Dorset $64^{\circ}17' \text{ N.}, 76^{\circ}45' \text{ W.}$

Bowdoin Harbour

Cannon Inlet

Tommys Lake

Cairn Lake

Seal Harbour

} all near Cape Dorset

Cape Queen $64^{\circ}42' \text{ N.}, 78^{\circ}30' \text{ W.}$

(6) Melville Peninsula

This, with its various adjacent islands, has an area of approximately 25,000 square miles, and extends from about $69^{\circ}50' \text{ N.}$ southwards to $65^{\circ}50' \text{ N.}$, and from $80^{\circ}30' \text{ W.}$ to $87^{\circ}20' \text{ W.}$

Fury and Hecla Strait (south shore of, and islands in) $69^{\circ}50' \text{ N.}$
 $82^{\circ}30' - 85^{\circ}45' \text{ W.}$

Cape North East $69^{\circ}40' \text{ N.}, 82^{\circ}30' \text{ W.}$

Neerlo Nakto $69^{\circ}30' \text{ N.}, 82^{\circ} \text{ W.}$

Igloolik $69^{\circ}22' \text{ N.}, 81^{\circ}43' \text{ W.}$

'*Interior*'

East Coast: around 68° N. and 82° W.

Pingitkalik (Pingerqalik) $69^{\circ}10' \text{ N.}, 81^{\circ}50' \text{ W.}$

N. Ooglit (Ugli) Island $68^{\circ}50' \text{ N.}, 81^{\circ}40' \text{ W.}$

Usugarsuk $67^{\circ}48' \text{ N.}, 82^{\circ} \text{ W.}$

Tasersuaruseq Lake $67^{\circ}30' \text{ N.}, 81^{\circ}30' \text{ W.}$

Barrow River $67^{\circ}22' \text{ N.}, 81^{\circ} \text{ W.}$

Elizabeth Point $66^{\circ}42' \text{ N.}, 82^{\circ}15' \text{ W.}$

Palmer Bay $66^{\circ}35' \text{ N.}, 82^{\circ}30' \text{ W.}$

Winter Island $66^{\circ}15' \text{ N.}, 83^{\circ}15' \text{ W.}$

Lyon Inlet $66^{\circ}15'-67^{\circ}$ N., $83^{\circ}45'-85^{\circ}15'$ W.
 Hoppner Inlet (including Red Point) $66^{\circ}45'$ N., $84^{\circ}20'$ W.
Five Hawser Bay $66^{\circ}30'$ N., $84^{\circ}30'$ W.
Cape Martineau c. $66^{\circ}10'$ N., c. 84° W.
 'Martineau Island at Cape Martineau' and 'Island between Cape McLaren and Cape Martineau' c. $66^{\circ}8'$ N., c. 84° W.
Angmalortoq Lake "between Lyon Inlet and Repulse Bay"
Gore Bay $66^{\circ}20'$ N., $83^{\circ}30'$ W.
Duckett Cove $66^{\circ}10'$ N., 85° W.
 Frozen Strait $66^{\circ}6'$ N., 85° W.
 Repulse Bay $66^{\circ}30'$ N., $86^{\circ}20'-86^{\circ}45'$ W.
 'Hall Island in Repulse Bay'
 Vansittart Island $65^{\circ}50'$ N., $83^{\circ}30'$ W.
 Opposite Island 66° N., $83^{\circ}20'$ W.
 Danish Island 66° N., $83^{\circ}30'$ W.
 Georgina Island "in Hurd Channel", i.e., off the northwest coast of Vansittart Island
 (Cape Lady Pelly: just outside our area, to the west)

(7) Northernmost Labrador

Very little of Labrador lies north of the 60th parallel, so that this is by far the smallest of our districts, reaching only to a little below 61° N., and stretching from about 64° W. to 65° W.

Lacey Island c. $60^{\circ}40'$ N., c. $64^{\circ}40'$ W.
 Chidley Peninsula (Killinek Island, etc.) $60^{\circ}-60^{\circ}30'$ N., c. $64^{\circ}-65^{\circ}$ W.
 Cape Chidley (Chudleigh) $60^{\circ}27'$ N., $64^{\circ}28'$ W.
 (Port) Burwell $60^{\circ}25'$ N., $64^{\circ}52'$ W.
Lady Job Harbour $60^{\circ}23'$ N., $64^{\circ}32'$ W.
Bowdoin Harbour c. $60^{\circ}10'$ N., $64^{\circ}28'$ W.
 (South shore of) Grenfell Tickle (McLelan Strait): around $60^{\circ}20'$ N. and $64^{\circ}40'$ W.
Ikordlearsuk Mountain $60^{\circ}2'$ N., c. $64^{\circ}20'$ W.

(8) Northern Quebec

The part of the mainland of Quebec that lies north of the 60th parallel has an area of some 50,000 square miles and extends to $62^{\circ}30'$ N. It stretches longitudinally from about $69^{\circ}20'$ W. to $78^{\circ}41'$ W.

Diana Bay 61° N., 70° W.
 Payne Bay $60^{\circ}2'$ N., $69^{\circ}40'$ W.
 Payne River $60^{\circ}5'$ N., $70^{\circ}30'-72^{\circ}30'$ W.
 'South shore of Hudson Strait'
 Cape (Prince of) Wales $61^{\circ}33'$ N., $71^{\circ}30'$ W.
Stupart(s) Bay $61^{\circ}35'$ N., $71^{\circ}35'$ W.
Joy Bay $61^{\circ}30'$ N., $71^{\circ}40'$ W.
 Wakeham Bay $61^{\circ}36'$ N., $71^{\circ}53'$ W.
 King George Sound $62^{\circ}5'$ N., $72^{\circ}35'$ W.
 Sugluk (Inlet) $62^{\circ}15'$ N., $75^{\circ}21'$ W.
 Eric Cove (Wolstenholme) $62^{\circ}35'$ N., $77^{\circ}15'$ W.
 Cape Wolstenholme $62^{\circ}35'$ N., $77^{\circ}15'$ W.

(*Eskimo village of*) *Hyla* "near Cape Wolstenholme"

Digges Island 62°35' N., 77°45' W.

(*Mainland*) opposite Digges Island c. 62°25' N., 77°30' W.

Icy (Ice) Harbour 62°15' N., 78°20' W.

(*River*) Kovik 61°38' N., 77°45' W.

Mosquito Bay 60°50' N., 78° W.

Smith Island (including Cape Smith) 60°49' N., 78°45' W.

(9) Islands in Hudson and Ungava Bays

Of these the largest by far is Southampton Island, which has an area of approximately 20,000 square miles (cf. Manning 1936, p. 232). Next in size (cf. Bethune 1935, p. 16) come Coats Island (1,544 square miles) and Mansel Island (1,317 square miles). For purposes of citation, Akpatok Island in Ungava Bay is considered with this Hudson Bay group. The "district" so constituted extends from 60°13' N. to 66° N., and from 67°48' W. to 87° W.

Akpatok Island: around 60°25' N. and 68° W.

Salisbury Island: around 63°33' N. and 77° W.

Nottingham Island: around 63°15' N. and 77°52' W.

Mansel (Mansfield) Island: around 62° N. and 79°50' W.

Southampton Island 62°55'-65°52' N., 80°7'-87°00' W.

Northeast coast (c. 65°30' N., c. 83° W.)

Cape Welsford 65°30' N., 84°30' W.

North side of White Island c. 66° N., 85° W.

White Island 65°50' N., 85° W.

(*Duke of*) *York Bay* 65°18'-65°37' N., 85° W.

South Bay: around 64° N. and 83°15' W.—includes *Coral Harbour*

64°13' N., 82°40' W., and the nearby *Bear Island*, *Kirchoffer*

River, *Ranger Brook*, *Nuwoodlik Hills*, and *Noksaruak*

Walrus Island 63°15' N., 83°25' W.

Cape Low 62°55' N., 85°40' W.

Coats Island: around 62°30' N. and 82°30' W.

(10) West Coast of Hudson Bay

This comprises the Hudson Bay and Roes Welcome coast of Keewatin and its adjacent small islands. Localities that lie more than a few miles west of the general sea-coast are ignored, except in the case of Wager Bay. The area covered is, consequently, rather small, although the "district" extends from 60° northwards to the Arctic Circle (66°33' N.), and from 86°30' W. to 94°40' W.

Wager Bay 65°30' N., 88°-93° W.

Small island (in Roes Welcome) south of Wager Bay c. 65° N., c. 87° 40' W.

Whale Point 64°20' N., 88° W.

(*Cape*) *Fullerton* 64° N., 88°40' W.

Walrus Island, near Cape Fullerton 63°55' N., 89°30' W.

Depot Island 63°48' N., 90°17' W.

Chesterfield 63°20' N., 90°50' W.
Fairway (Farewell) Island, near Chesterfield
 Marble Island 62°40' N., 91° W.
 Rankin Inlet 62°42' N., 92° W.
Mouth of Maguse River 61°25' N., 94°15' W.
 Cape Eskimo 61°5' N., 94°10' W.
Tikerarjualaq, south of Eskimo Point, 61° N., 94°10' W.
 'Point Look Out'

HISTORY OF EXPLORATION

Columbus' belief in the existence of a passage westwards to Asia is said to have been the main object of his voyage to America in 1492. He was followed by Cabot, who in 1498 may perhaps have coasted as far north as Hudson Strait and sighted Baffin. The discovery of this great island must, however, be attributed to Frobisher, who in 1576 sailed north until he entered the bay in southeast Baffin that now bears his name.

By this time the fact of a continental barrier to a direct passage to the Orient was accepted, and rumours of a "Northwest Passage" had come to occupy the attention of enterprising navigators. The most noteworthy of these were Davis, who in the 1580's explored the great strait now bearing his name, which separates Greenland from Baffin; Hudson, who in 1610 entered the western straits and the next year perished in the huge bay now called after him; and Sir Thomas Button, who in 1612 explored the east coast of Hudson Bay, a work that was completed (after Jens Munk's classic wintering at Churchill in 1619) by James and Foxe in 1631. In 1615-16 Robert Bylot and William Baffin sailed northwards to nearly 78 degrees, discovering Devon Island and also Ellesmere, and naming Smith Sound between the latter and northwestern Greenland. (Apparently none of the above made plant collections, but they paved the way for those mentioned below, who in most cases did.)

Now, the more easily accessible lands having been discovered and named, few except whalers and fur traders visited our area for 200 years. Then in 1818 the English Government sent out an expedition under Captain John Ross to renew the search for the Northwest Passage. This expedition secured the first botanical collection known to have been brought back from the Arctic Archipelago and, except for a few miscellaneous scraps, from any part of our area. Unfortunately, Robert Brown, in compiling a botanical appendix to Ross' report (cf. 1819), "lumped" the Greenland plants with those from our area, so that with a few exceptions I am unable to cite them.¹

Much more extensive and important were the explorations and resulting collections of Captain (later Admiral Sir) W. E. Parry and his officers. Parry's first expedition (1819-20) sailed through Lancaster Sound and wintered on Melville Island, to the west of our area, whence extensive collections were brought back. These were written up by Robert Brown in his *Chloris Melvilliana* (cf. 1824) which, being the first detailed paper on the botany of any part of Arctic America, is important in containing

¹ For similar reasons, that they lack precise localities, Sir John Ross' collections from his second voyage (1829-33) are practically useless.

the descriptions of a number of new species and even genera. Parry's second expedition (1821-3) entered Hudson Strait and, after a brief visit to Southampton Island, concentrated on Melville Peninsula, as the ships were beset by ice and unable to get farther west. The extensive botanical collections, made not only by Parry himself but also by his ships' officers and surgeons, J. Edwards, A. Fisher, W. H. Hooper, and J. C. Ross, are treated by W. J. Hooker in the appendix (cf. 1825) to Parry's narrative of his "second voyage" (cf. 1824). Parry's third expedition (1824-5) operated under difficult ice conditions around Lancaster Sound and to the southwest until one of the ships was wrecked. The botanical collections are again treated by the elder Hooker (cf. 1826).

Meanwhile the exploration of the mainland regions to the southwest of our area was pushing on apace, through the activities of such men as Hearne (1771, etc.), Mackenzie (1789, etc.), and particularly Franklin and Richardson (1819-22 and 1825-27), who with Drummond supplied most of the material for Sir W. J. Hooker's great *Flora Boreali-Americana* (cf. 1840). Other important discoveries were made, chiefly in the west, by Captain G. Back, by Dease and Simpson of the Hudson's Bay Company, and, later, by Dr. John Rae. Of all these only the last-named (cf. Rae 1850) made botanical collections or observations in our area that, in the face of the great bulk of data now available, are worth mentioning here. But in spite of the brave work of all the above, it was probably to a large extent the unconsolidated state of the resultant knowledge of these western regions that led up to an event that was destined to give the greatest impetus to explorational activities in the central and northern parts of our area. This was the loss of Sir John Franklin's huge expedition, which in 1845 sailed westwards through Lancaster Sound and Barrow Strait in a final attempt of the British Government to find the Northwest Passage. From 1848, when anxiety for the welfare of the expedition began to be felt, until 1857, when even Lady Franklin began to give up hope, numerous expeditions of all kinds were sent out to endeavour to carry relief to the missing explorers.

These relief and search expeditions came mainly from three directions: (1) the Bering Strait region; (2) the mainland districts of Keewatin and Mackenzie; and (3) Baffin Bay and Lancaster Sound, following Franklin's own route. We are here concerned almost entirely with (3), of which the most noteworthy from the botanical point of view are those of Sir J. C. Ross (1848-9), from which a few plant specimens are existent, Penny (1850-51), during which Dr. Sutherland made a useful collection of plants on Cornwallis Island (cf. Polunin 1936b), and Belcher (1852-4). This last was a British Government expedition consisting of no less than five ships, four of which had to be abandoned in the ice, but not before Dr. David Lyall and one Pullen¹ had made botanical collections of some importance in the Lancaster Sound region, which were brought back in the remaining ship in 1854 and identified by J. D. Hooker (cf. 1857).

As late as 1857 Captain (later Admiral Sir) F. L. McClintock was sent out to search for Franklin's party, being this time successful to the

¹ There were two officers of this name on the expedition, Commander W. J. S. and T. C. I have not been able to make out which was the botanist.

extent of finding definite proof of the disaster that had overtaken them; during McClintock's expedition Dr. Walker made plant collections, which are treated by J. D. Hooker (cf. 1861).

In 1857-62 James Taylor, surgeon on whaling vessels, made important pioneer collections at a number of points in Cumberland Gulf and northwards on the east coast of Baffin (cf. Taylor 1863), and in 1873 Captain A. H. Markham, during a whaling expedition, made smaller collections around Somerset Island.

Meanwhile the land to the north, in particular the great Ellesmere Island, had been claiming attention from some others who were supposedly searching for Franklin. Ellesmere had been sighted and named by Bylot and Baffin in 1616, but it was not further explored until 1851 when Sherard Osborn landed on Cone Island in Jones Sound. The next year Inglefield sailed farther up Smith Sound than any of his predecessors had done, but without landing on the west side. This was accomplished by the expedition of Kane (1853-5), during which Dr. I. I. Hayes was the first to note plants on Ellesmere. Hayes visited Grinnell Land again during his own expedition of 1861, collecting nine common vascular plants, which are treated by Durand *et al.* (cf. 1863). Then came the Polaris Expedition, and, in 1875-6, the important British Government "Alert and Discovery" Expedition under Captain Sir G. S. Nares. The botanist of this expedition, Henry Chichester Hart, made important collections, which were supplemented by those of Captain H. W. Feilden, Lieutenant Pelham Aldrich, and others, and have been published in detail by Hart (cf. 1880).

The greater part of the botanical material from Nares' expedition was gathered in Lady Franklin Bay, where Hart's ship wintered, and it was again chiefly here that the ill-fated United States "International Polar Year" expedition under Lieutenant (later General) A. W. Greely operated in 1881-3 (cf. Greely 1886 and 1888).

The most important contribution to the knowledge of various parts of Ellesmere and the adjacent islands was, however, made by the Norwegian "Fram" Expedition of 1898-1902, whose botanist, H. G. Simmons, has published an admirable "Flora of Ellesmereland" (cf. 1906), which makes this northernmost part the best known botanically in our area. Other additions have been made by Peary (especially in 1898-9), by the several Canadian Government expeditions of the present century, and by the Oxford University Expedition of 1934-5. Botanical collections during these and other enterprises have been made in Ellesmere by Wetherill (1894), Wolf (1906), Bartlett (1908), Goodsell (1909), Hansen (1920), and several others, including myself on two occasions.

The most important expeditions, at least from a botanical point of view, to the other parts of the Eastern Arctic since the dropping of the search for Franklin and since the work of Taylor and Markham, which was mentioned above, have been as follows:

During 1877-8 L. Kumlien made botanical collections in Cumberland Gulf, while a member of the American "Howgate" Expedition—which, however, seems to have had other objects than the collection of scientific data (cf. Kumlien 1879).

During 1882-3 a German "International Polar Year" expedition wintered at Kingua in Cumberland Sound. Plants were gathered by the

chief of the party, Dr. W. Giese, the collection being treated (with another made elsewhere in Baffin the following year by F. Boas) by Ambronn (cf. 1890).

In 1884 and 1885 Robert Bell accompanied Canadian Government cruises into the southern parts of our area as botanist and geologist, bringing back extensive plant collections from Hudson Strait and Bay, which have been treated by John Macoun (cf. 1884-90). Bell made still further collections in the same region in 1897, followed the next year by A. P. Low.

During 1893-4 George Comer made small collections on the west coast of Hudson Bay (cf. Fernald 1898).

In 1896 Professor Tarr, during one of Peary's expeditions, made a useful collection of plants in southern Baffin (cf. Rowlee and Wiegand 1897), and in 1897 Messrs. Schuchert and White brought back a collection from the east coast just north of Frobisher Bay (cf. Holm 1900).

In 1903 Roald Amundsen passed through Lancaster Sound in the auxiliary power schooner *Gjøa*, which completed the Northwest Passage by sailing into Bering Strait 3 years later. The botanical results of this expedition are important, but concern only the regions to the west of our area.

During 1903-4 the Canadian Government steamer *Neptune* made extensive cruises in the Eastern Arctic, some plants being collected by Dr. L. E. Borden (cf. James M. Macoun in Low 1906 and 1912). Other cruises were made on behalf of the Government by the C.G.S. *Arctic* in 1906-7, 1908-9, and 1910, although the botanical results were not great.

In 1905 and 1906 Sir William MacGregor made good collections of plants in various parts of Labrador, including some from our area (cf. anon. in Kew Bulletin 1907), and in 1906 Bernhard Hantzsch made similar collections, which he published in 1909.

In 1909 Peary "discovered" the North Pole and so ended activities that, apart from some of the subsidiary expeditions, have given rather meagre scientific results.

In 1910 the Canadian Government botanist James M. Macoun made extensive plant collections on the west coast of Hudson Bay north of the 60th parallel. He brought back a wealth of valuable material, on which I here report in detail for the first time. For the next decade there was a comparative lull in Eastern Arctic activities, although the Canadian Arctic Expedition of 1913-18 was making extensive investigations to the west.

During 1921-4 the Danish "Fifth Thule" Expedition made extensive investigations, including some botanical collections, in northern Baffin, Melville Peninsula, and other of the southwestern parts of our area. The plants collected by Helge Bangsted, Peter Freuchen, Therkel Mathiasen, J. Olsen, Kaj Birket-Smith, and Knud Rasmussen, have been treated in detail by Grøntved (cf. 1936).

In 1922 R. Robinson, during the expedition of D. MacMillan, collected plants in southwest Baffin, which have been treated by Fernald (cf. 1923b).

In 1923 J. D. Soper and others made botanical collections while accompanying the Canadian Government patrol, which visited several parts

of the Eastern Arctic. From then until 1931 Soper almost annually sent back collections from different parts of Baffin Island, the resulting information being brought together for the first time in this present work.

In 1927 Frits Johansen made small collections at several points around the shore of Hudson Strait, when accompanying a Canadian Government patrol.

In 1927 C. S. Sewall and in 1929 Professor S. C. Palmer made small but useful collections in the southeast corner of our area, including in both cases some notable additions to the known flora.

By 1927, too, the more extensive Canadian Eastern Arctic Expedition had become an established event, visiting annually for supply and administrative work, no less than for scientific investigation, almost all the major districts of our area. The landings at the different points of call vary from a few hours to 2 or even 3 days; nevertheless scientists accompanying the expedition, working at fever pitch, generally manage to obtain important results in the short time available. Apart from that of the "Fram," by far the most extensive botanical collections brought back from the Canadian Eastern Arctic have been made during these Government expeditions—in 1927, 1928, and 1933 by the late Dr. M. O. Malte, and in 1934 and 1936 by myself.

In 1928 Gunnar Seidenfaden of the Danish "Godthaab" Expedition visited parts of Baffin and Ellesmere. The landings were brief and botanically unimportant (cf. Seidenfaden 1932), but extensive collections of marine plankton were obtained, the plant constituents of which will be described in detail in Part II of the present series.

In 1930 G. M. Sutton collected plants on Southampton Island (cf. Raup 1936). He was followed in 1934-6 by Manning, myself, and others (cf. Polunin 1938b). In 1930, also, A. E. Porsild visited Coats Island, having previously made large collections on the mainland to the southwest.

In 1931 the Oxford University Expedition spent August and September investigating Akpatok Island in Ungava Bay. As botanist I made extensive collections (cf. Polunin 1934 and 1937d¹) and a detailed ecological survey (cf. Polunin 1934b and 1935).

In 1933 J. B. Angel of the "Norcross-Bartlett" Expedition made noteworthy additions to the known flora of Melville Peninsula and surrounding areas.

In 1934, and again in 1937, Cambridge parties organized by Mr. J. M. Wordie brought back plant collections from our area, which do not, however, include anything of major significance.

During the Canadian Eastern Arctic patrol of 1936 smaller "side" expeditions and, at my special request, useful botanical collections, were made by C. H. Ney and Joe Courtright of the Geodetic Survey at Diana Bay (cf. Polunin 1937c), and by Douglas Leechman of the National Museum on Mansel Island (cf. Polunin 1938).

In 1937 Professor David Potter visited Frobisher Bay and Resolution Island in southeast Baffin, where he was kind enough in his botanical collecting to pay special attention to certain groups that I have found to be critical in our area.

Besides the above, numerous other people have made botanical collections or observations in the Eastern Arctic. The vast majority of these

¹ The corrections here promised are incorporated in the present work.

collections from our area, both large and small, I have seen and revised in my own or one or other of the main herbaria of Europe or North America. Those smaller ones that have been observed to contain nothing worthy of note seem best ignored, whereas others that I have not seen are cited merely from published records. Some of the latter, when they contain only a very few plants, may be neglected; but otherwise all workers who are known¹ to have obtained botanical data of any consequence in the Canadian Eastern Arctic are mentioned in the following list, which also gives the dates and names most of the points at which each collector worked.² However, where I have not seen any significant specimens (i.e., ones considered worthy of individual citation in the body of the work) of such and such a collector from a particular place, this place is not mentioned in the following list, although in the case of published records it can generally be found from the appended literature citation. The numbers refer to the ten major districts into which the Eastern Arctic has been divided, as explained on page 1.

Abbe, E. C.....	1931	(7) Ikordlearsuk Mountain
Aldrich, P.....	1875	(1) Cape Columbia Cape Discovery
Anderson, R. M.....	1928	(2) Cape Sparbo
Angel, J. B.....	1933	(6) Igloolik Winter Island Lyon Inlet Between Cape McLaren and Cape Martineau
		(9) North side of White Island Cape Low
Anon.....	1792, etc.	(1) Grant Land Twin Glacier Valley (4) Cumberland Gulf (6) Winter Island Repulse Bay (9) Southampton Island (10) Chesterfield Marble Island
Baird, P. D.....	1936	(9) South Bay Ranger Brook Nuwoodlik Hills Noksaruak Walrus Island Cape Low
Bangsted, H.....	1922-3	(6) Point Elizabeth Palmer Bay Vansittart Island Danish Island
Bartlett, R. A.....	1908	(1) Grant Land 82° 30' N.
Bazin, E.....	1935	(3) Pond Inlet

¹ I believe that there can be few, if any, collections of importance from our area that have escaped my many months of searching in herbaria, writing of inquiring letters, and even publication of appeals (e.g., in *Nature* Aug. 1936, pp. 331-2, and *Rhodora* 1936, p. 409) in an attempt to gather all relevant data.

² I have not thought it necessary to indicate here the actual herbaria in which the collections of the various explorers and scientific workers are stored. Indeed, in view of the wholesale exchange that goes on nowadays, this would be quite a complicated matter. However, from the whereabouts (indicated by a symbol as explained on p. 24) of each individual specimen that is cited in the main body of this work as having been seen by me, it will be quite evident where at least an important part of each collection is to be consulted. My own and most other recent ones to which no symbol is attached are at least well represented in the British Museum and the appropriate unit of the Herbaria of Oxford University, of which I am now privileged to be Keeper and Fielding Curator.

Bell, R.....	1884, 1885, 1897	(5) North Shore of Hudson Strait Upper Savage Island(s) Ashe Inlet Amadjuak District Between Amadjuak and Tchark- bach Fiords Tchark-bach Fiord (7) Cape Chidley (8) Cape Wales Stupart Bay King George Sound Digges Island Near Cape Wolstenholme Eskimo Village of Hyla (9) Nottingham Island (4) (ex Ambronn, 1890) (2) Cuming Creek Beechy Island (3) Pond Inlet (7) Port Burwell (8) Wakeham Bay (9) Southampton Island (10) Fullerton (9) Salisbury Island (5) Cape Dorset (9) Salisbury Island (10) Chesterfield (10) Whale Point Depot Island and near (10) Cape Eskimo (3) Arctic Bay (4) Clyde (10) Chesterfield Fairway Island (2) Cornwallis Island (6) Melville Peninsula Island at the mouth of Fury and Hecla Strait Igloolik Winter Island Repulse Bay (9) Southampton Island York Bay (1) Cape Sabine (1) Rice Strait Buchanan Bay (Turnstone Beach) Craig Harbour (1) Grant Land 83° Cape Joseph Henry Feilden Peninsula Egerton Valley Dumbbell Harbour Floeberg Beach Shift Rudder Bay Franklin Pearce Bay Alexandra Haven Twin Glacier Valley Cape Sabine (6) Igloolik (9) Southampton Island
Boas, F.....	1883-4	
Borden, L. E.....	1904	
Buchan, Hon. J. N. S.	1938	
Burwash, L. T.....	1924-6	
Comer, G.....	1893-4	
Cope, T. M.....	1934	
Dutilly, A.....	1936	
Ede, C.....	1851	
Edwards, J.....	1821-3	
Emory, W. H., jun.....	1884	
Feachem, R. W. deF.....	1937	
Feilden, H. W.....	1875-6	
Fisher, A.....	1821	

Freuchen, P.....	1922-4	(3) Numerous localities (6) Numerous localities (10) Wager Bay Roes Welcome south of Wager Bay Whale Point Walrus Island near Cape Fullerton Chesterfield
Gardner, G.....	1933	(10) Chesterfield Cape Eskimo
Giese, W.....	1882-3	(4) (ex Ambronn, 1890)
Goodsell, J. W.....	1909	(1) Grant Land Cape Sheridan
Güssow, W. C.....	1932	(10) Mouth of Maguse River Cape Eskimo
Greely, A. W.....	1881-3	(1) Lake Hazen Valley Grinnell Land Lady Franklin Bay Discovery Harbour
Hanham, J.....	1934	(4) Isabella Bay
Hansen, Godfred.....	1920	(1) Cape Columbia Near Fort Conger Cape Richardson
Hantzsch, B.....	1906	(7) Port Burwell and near
Hart, H. C.....	1875-6	(1) Grinnell Land Discovery Harbour Dobbin Bay Walrus (Norman Lockyer) Island Hayes Sound Edwards Grief Deserted Village Ptarmigan Hill
Hayes, J. J.....	1860-1	(1) (ex Durand <i>et al.</i> ,) 1863
Herd, D.....	.....	(10) Point Look Out
Hooper, W. H.....	1821-2	(3) Tern Island (6) Neerlo Nakto Igloolik Barrow River Winter Island Lyon Inlet Duckett Cove Repulse Bay (9) Cape Welsford York Bay
Hoppner, H. P.....	1822	(3) (ex Parry, 1824)
Horner, A. C.....	1875	(2) Limestone Island
Jakeman and Fielder.....	1923	(1) Craig Harbour
Jewell, W. S.....	c. 1882	(1) Discovery Harbour
Johansen, Frits.....	1927	(5) Lake Harbour (7) Port Burwell (8) Joy Bay Wakeham Bay Wolstenholme (9) Nottingham Island (3) Pond Inlet
Joy, A. H.....	1924	(1) Craig Harbour
Kearney, H.....	1935	(4) Clyde (5) Ward Inlet Lake Harbour
Knapp, S. C.....	1932-6	(8) Diana Bay (4) Cumberland Gulf Kingnait American Harbour Kekerten Kingua Quickstep Harbour
Kumlien, L.....	1877-8	

Lavoie, J.....	1910	(3) Pond Inlet
Leechman, D.....	1936	(9) Mansel Island
Low, A. P.....	1897-8	(8) South shore of Hudson Strait Wolstenholme Opposite Digges Island Near Icy Harbour River Kovik Mosquito Bay
Lyall, D.....	1852-4	(2) Powell Creek Beechy Island Between Beechy Island and Northumberland Sound Wellington Channel East side of Wellington Channel
Lyon, G. F.....	1824	(3) Ponds Bay Navy Board Inlet
McClintock, F. L.....	1850-4	(9) (ex Hooker, 1825b)
MacGregor, W.....	1905	(2) (ex C. R. Markham, 1909)
Mackenzie.....	1886	(7) Chidley Peninsula
MacKinnon, A. G.....	1886	(9) Nottingham Island
MacMillan, J. G.....	1936	(4) Pangnirtung
Macoun, J. M.....	1908	(2) Beechy Island
	1910	(7) Port Burwell
		(10) Wager Bay Fullerton Rankin Inlet Cape Eskimo
Maltby, O. J.....	1920	(8) Payne River
Malte, M. O.....	1927, 1928, 1933	(1) Bache Peninsula Craig Harbour
		(2) Dundas Harbour Beechy Island Port Leopold
		(3) Pond Inlet (Albert Harbour) Arctic Bay
		(4) Clyde Pangnirtung
		(5) Lake Harbour Cape Dorset
		(7) Port Burwell
		(8) Wakeham Bay Sugluk Wolstenholme Cape Smith
		(9) South Bay (Coral Harbour)
Manning, T. H.....	1934	(10) Chesterfield
Markham, A. H.....	1873	(9) South Bay
		(2) Elwyn Inlet Fury Beach Cape Garry
Mathiassen, T.....	1921-3	(3) Numerous localities
		(6) Numerous localities
		(9) White Island York Bay Near Kirchoffer River
Neill.....	1825	(2) Fury Beach
Ney, C. H., and Courtright, J.....	1936	(8) Diana Bay Payne Bay
Olsen, J.....	1922	(6) Repulse Bay
		(9) York Bay
Palmer, S. C.....	1929	(5) Loks Land Frobisher Bay North shore Frobisher Bay

Parry, W. E.....	1821-5	(2) Cape Warrender Somerset Island
		(3) Port Bowen Tern Island
		(5) Upper Savage Islands
		(6) Fury and Hecla Strait Neerlo Nakto Igloolik East Coast Barrow River Winter Island Lyon Inlet Five Hawser Bay Duckett Cove Frozen Strait Repulse Bay
		(9) Southampton Island York Bay
Payne, F. F.....	1886	(8) Stupart Bay
Polunin, Nicholas.....	1931-6	(1) Craig Harbour (2) Dundas Harbour (3) Pond Inlet Arctic Bay (4) Clyde Pangnirtung (5) Lake Harbour Cape Dorset (7) Port Burwell (8) Wakeham Bay Sugluk Wolstenholme Cape Smith (9) Akpatok Island South Bay (Coral Harbour)
		(10) Chesterfield
Porsild, A. E.....	1930	(7) Port Burwell (9) Coats Island
Potter, D.....	1937	(5) Frobisher Bay Point Brewster North of York Harbour York Harbour Acadia Harbour (7) Lady Job Harbour Bowdoin Harbour
		(7) Lacey Island Port Burwell Bowdoin Harbour South shore of Grenfell Tickle
Potter, D., and Brierly, W. B.....	1934	(10) (ex Schneider, 1919)
		(2) Cape Riley Beechy Island Repulse Bay
Preble, E. A. and A. E.....	1900	Angmalortoq Lake
Pullen.....	1852	(5) (ex Franklin, 1823)
Rae, J.....	1847	(5) Cape Dorset Bowdoin Harbour Cannon Inlet Tommys Lake Cairn Lake Seal Harbour Queens Cape
Rasmussen, K.....	1923	
Richardson, J.....	1819	
Robinson, R.....	1922	

Ross, J. C.....	1821-5, 1849	(2) Cape Warrender Somerset Island Port Leopold (3) Port Bowen (5) Upper Savage Islands (6) Melville Peninsula (Island in) Fury and Hecla Strait Winter Island
Ross, J.....	1818, 1833	(2) Fury Beach and near (3) Possession Bay
Rowley, G. W.....	1936	(9) Noksaruak
Schei, P.....	1900-01	(1) and (2) (ex Simmons, 1906 and 1909b)
Schuchert, C., and White, D.....	1897	(5) Cape Haven Signuia, near Cape Haven
Seidenfaden, G.....	1928	(1) and (4) (ex Seidenfaden, 1932)
Sewall, C. S.....	1927	(5) Frobisher Bay (7) Bowdoin Harbour
Simmons, H. G.....	1898-1902	(1) Hayes Sound Beitstad Fiord Alexandra Fiord Skråling Island Cape Viele Eskimopolis Lastraea Valley Twin Glacier Valley Cape Rutherford Cocked Hat Island Bedford Pim Island Fram Harbour Fram Fiord Harbour Fiord Big Valley Seagull Rock Musk-ox Fiord Goose Fiord
Smith, K. Birket-	1922-3	(6) Vansittart Island Danish Island (10) Wager Inlet Depot Island Chesterfield Eskimo Point Tikerarjualaq, south of Eskimo Point
Soper, J. D.....	1923-31	(1) Craig Harbour (2) Dundas Harbour Beechy Island (3) Pond Inlet Too-loo-kan Strathcona Sound (4) Numerous localities (5) Numerous localities (7) Port Burwell
Stein.....	1899-1900	(1) (ex Simmons, 1906)
Sutherland, P. C.....	1846, 1851	(2) Assistance Bay (4) Keinooksooke
Sutton, G. M.....	1930	(9) South Bay Bear Island (10) Chesterfield

Taylor, J.	1857-62	(4)	West side of Davis Strait Scotts Bay Cape Searle Exeter Fiord Cumberland Gulf Kingnait Niatolik Kekerten Island Milikdjuak Islands
Tredgold.....	1925	(4)	Nettilling Lake
Turner, H. A.....	1934-6	(4)	Pangnirtung
Tyrrell, J. B.....	1893	(10)	Chesterfield Marble Island
Walker.....	1857-8	(2)	Lancaster Sound Port Kennedy
		(3)	Pond Inlet
Wetherill, H. E.....	1894	(1)	Cape Faraday North side of Jones Sound
Wilcox, C. E.....	1928	(3)	Button Point
Wolf, L. J.....	1906	(1)	Grant Land 82° 27' N.

VASCULAR PLANT FLORA

Now that the extent of our area has been defined and the pertinent collections from it have been enumerated, we can, with this geographical and historical background, give an account of the scope and arrangement of the vascular plant flora that is to follow.

My first care was to visit the chief American herbaria to which arctic collections have gone, for the purpose of revising all the material from our area. At this work I spent nearly a year in the Gray Herbarium of Harvard University, 2 months in the National Herbarium of Canada at Ottawa, and shorter periods elsewhere in America. I have also worked through the British Museum, Kew, Copenhagen, and other European herbaria in the same way, "picking out" the specimens that had been collected in our area. The resulting harvest of records, including my own collections and other recent ones that I have been sent for identification, I would estimate at between 50,000 and 60,000. Of course, from such abundant material it has been possible to make many generalizations, and so only a small proportion of the above will be found to be cited individually in this book.

Whenever possible I have consulted the original "type" or "cotype" specimens before making up my mind as to the limits of a species. But for obvious reasons, and as must indeed be usual in a work of this kind, the vast majority of the determinations mentioned above (50,000 to 60,000) have been made merely from memory, or at best by consulting the original descriptions.

It will be noted that my conception of the species is rather broad—that I tend to be a "lumper" rather than a "splitter." My varieties are the subspecies of some authors, and even the microspecies of others—entities which in possessing several "characters" of distinction from the rest of the species, and in having a geographical distribution of their own, are "on the way to becoming species." My *formae* are entities which, in our present

state of ignorance concerning the genetics and cytology of most groups, are assumed to be of lesser taxonomic significance. They are often striking enough in their differences from the typical or "head" form, at least in the apparently less conservative characters, but still are presumably mere phases, which lack on one hand a real *group* of heritable characters and on the other a geographical range distinct from the rest of the species.

It will also be noted that I have departed from the usual policy of sending certain of the recognized "critical" groups to specialists for determination. This does not mean that I have not consulted all available specialists and taken their advice over and over again; but I have tried above all to be consistent and, as different workers nowadays hold such entirely different opinions as to just what a species is and how widely its limits should be drawn, the only logical course has been to identify and report on everything myself.

The order and nomenclature followed in this Flora are generally those of the Gray Herbarium of Harvard University, which are essentially those of the latest edition (Robinson and Fernald 1908) of Gray's "Manual." However, the recent researches of, particularly, Professor M. L. Fernald and his followers have led to rather numerous additions and improvements to this work, and to changes almost throughout.

Each species that is known to occur in our area is introduced with its name and full citation of original publication, and then by such synonyms as are necessary to identify it fully in arctic botanical literature.¹ There follows in most cases a discussion of its systematic position, with special reference to the range of variation that it exhibits in or near our area; also when possible notes on its morphology, flowering and fruiting, and on any other features of special interest or significance. Varieties and forms are discussed, and when "taken up" as occurring and being definitely separable in our area are given a separate heading and full citation.²

Then under the heading of *General Distribution* comes a summarized statement of the known geographical range that the species occupies, including mention of the northernmost point at which it has been found. This, even if its range is only fragmentarily known, helps to place the species as relatively high- or low-arctic, subarctic, and so on. Then follows, under the heading of *Eastern Arctic Distribution*, as concise as possible a statement of the range occupied by the species in our area. Finally, under the heading of *Occurrence*, are given details of the relative abundance of the species in the various parts of its range in our area; also notes on its habitat and ecology, and on its importance as a component of the vegetation. The consideration of each species is concluded by the detailed citation, under the ten major districts headings mentioned on page 1, of the specimens of it that have been found within our area, or, in the case

¹ I have in most cases thought it best to exclude the records of "critical" plants mentioned in the literature but not supported by specimens (cf. footnote 1 on p. 76). However, I have attempted at least to mention all the species and forms that have ever been cited as growing in our area, so that the names will appear in the index, and thus my remarks on their respective occurrence or apparent absence can easily be traced.

² It must be admitted that this system, even if it appeared the most practicable from other points of view, does not allow the users of the present work, which is chiefly meant for purposes of reference, to see immediately (i.e., without scanning the text) whether the typical (head) form of a species is present in the area when subsidiary forms occur. The deficiency is remedied by the summarized list on pp. 376-383 of all the species, varieties, and forms that we now know to occur in the area.

of the commoner plants, by generalized statements under the same headings. The district name is followed by a letter indicating the relative frequency of the species in the districts as follows:

- c. common
- f. frequent
- l. local
- o. occasional
- r. rare

These frequency degrees are rough and merely provisional, and have nothing to do with the ones I use in my ecological writings. Indeed, they result merely from the impression I have gained (from field studies and examination of the collections of others) as to the probable frequency of each species in each major district, bearing in mind always its size and relative showiness. After this symbol come citations of the individual records of the species in the major districts concerned, the localities being given as far as possible in the order of their geographical position, starting in the north and working primarily southwards and secondarily westwards. Minor districts are put in italics, ordinary spot localities being followed by a comma. Then comes the surname of the earliest collector, followed by the date of his collection, and a citation of the herbarium where the specimen is stored as follows:

- O Ottawa—National Herbarium of Canada.
- M McGill University, Montreal.
- T Toronto University, Ontario.
- G Gray Herbarium of Harvard University, Cambridge, Mass.
- N New York—Herbarium of the Botanical Gardens.
- I Ithaca, N.Y.—Agricultural College of Cornell University.
- P Philadelphia—Herbarium of the Academy of Natural Sciences.
- W Washington—United States National Herbarium.
- K Kew—Herbarium of the Royal Botanic Gardens, London.
- B British Museum of Natural History, London.
- L Linnean Society of London.
- C Copenhagen—Botanical Museum.
- S Stockholm—Herbarium of the State Museum.
- D Dresden Museum.

Later collectors, if any, at the same locality follow in chronological order. The minor districts, whether they are indicated by a special italicized district-heading or not, are separated by periods, the individual localities by semicolons. The minor districts being often purely arbitrary, their limits, like the order of the localities, may in some cases be changed to facilitate citation.

When a specimen lies in an herbarium under a name other than the one I am using, this name will generally be given in quotes after the herbarium citation, except that if this name has already been given as a recognized synonym for the species it will be omitted, or the collection number (if any) will be given. Collection numbers of many "type" or otherwise noteworthy specimens are also given, to avoid all possibility of confusion and, it is hoped, to increase the value of the work for purposes of reference. The vast majority of the specimens cited I have myself seen and identified or checked. Those that I have not seen have "*"

after the symbol, which indicates their presence in such and such an herbarium according to some recent and generally reliable authority. Records that are merely taken from the literature have the localities in quotes¹, followed by the necessary citation. Here again any other name under which the species has been reported from our area will be mentioned, at least if it is not given above as a synonym, so that it will appear in the index with, I hope, the names of all other plants that have been recorded, either rightly or wrongly, from any part of our area (cf. footnote 1, page 23).

ACKNOWLEDGMENTS

It is a great pleasure to acknowledge indebtedness to the many who have given me hospitality, assistance, and the facilities without which this series could never have been completed. I think with such warmth of the gracious and friendly encouragement and support that I have received from both scientists and laymen on either side of the Atlantic that it is embarrassing to have to decide just where and how to begin saying "thank you." First thoughts should, perhaps, go to the long line of stoic earlier explorers mentioned above, who ventured forth they knew not where—all too often never to return. Those who were successful in many cases brought back pioneer collections of inestimable value to science, or gained immortality by having their names written on the maps of new regions; those who perished are too often forgotten. With their frail cockle-shells of sailing sloops, hand-drawn sledges, and scurvy-bringing salt foods they one and all helped to pave the way for the modern scientific investigator, whose lot is infinitely more comfortable and less hazardous.

There is, however, one to whom above all I would like to dedicate this work on the vascular plants, as it is to such a large extent a fruit of his own inspiring effort. I refer to my distinguished friend and colleague, Merritt L. Fernald, D.C.L., Director of the Gray Herbarium and Fisher Professor of Natural History, Harvard University. The extent to which I am indebted to him for friendly criticism and stimulating guidance is only modestly indicated by the fact that I cite nearly fifty of his publications in this present work. Others of whom I have sought advice or assistance on numerous occasions are Mr. C. A. Weatherby of the Gray Herbarium, Dr. H. M. Raup of the Arnold Arboretum, Mr. A. E. Porsild of the National Herbarium of Canada, Dr. John Ramsbottom, O.B.E., P.L.S., and Messrs. A. J. Wilmott, A. H. G. Alston, and J. E. Dandy of the British Museum, Messrs. J. Gilmour and N. Y. Sandwith of Kew, Drs. O. Hagerup, Th. Sørensen, and Magister J. Grøntved of the Botanical Museum of Copenhagen, and Dr. Morten P. Porsild of the Danish Arctic Station on Disko Island.

To Canadian Government officials in Ottawa I shall always remain indebted for their hospitality and support of my schemes, and particularly to the Superintendent of the Eastern Arctic and Officer-in-Charge of recent

¹ Except in the case of minor districts containing localities from which specimens have been seen.

expeditions thereto, Major D. L. McKeand, whose geniality and active support of explorational enterprise mean so much to the accompanying scientist.

To the following Directors or other officers I am indebted for permission to work in or receive loans from their respective herbaria, in either case often for a considerable time: Professor E. C. Scarth (McGill University), Dr. T. M. C. Taylor (University of Toronto), Professor M. L. Fernald (Gray Herbarium), Dr. H. A. Gleason (New York), Professor K. M. Wiegand (Cornell University), Dr. F. W. Pennell (Philadelphia Academy of Natural Sciences), Dr. W. R. Maxon (Washington), Sir A. J. Hill (Kew), Dr. J. Ramsbottom (British Museum), Mr. Savage (Linnean Society of London), and Professor Knud Jessen (Copenhagen).¹

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To friends and fellow scientists who, in areas that I have been unable to visit personally, have during the past few years either made plant collections especially for me or entrusted their material to me immediately on return, I offer my very warmest gratitude—the more so as in some cases they were put to considerable pains and even underwent hardships and dangers to carry out my instructions. They are, particularly, Professor David Potter of Clark University, P. D. Baird of Cambridge University, Père A. Dutilly of Montreal, Douglas Leechman of the Division of Anthropology, National Museum of Canada, T. H. Manning of Dallington, Northampton, C. H. Ney and Joe Courtright of the Geodetic Survey of Canada, Rev. R. Wenham and Rev. H. A. Turner, Anglican Missionaries to the Arctic, Hon. J. N. S. Buchan, and S. C. Knapp and Trevor Harwood of the Hudson's Bay Company. It is also a pleasure to thank Mr. J. M. Wordie of Cambridge University for his permission to look through the collections made during his two latest expeditions, which both touched our area.

I also thank the seven cryptogam specialists, already named in the general foreword, who have given me their painstaking and active collaboration in the production of Part II.

Thanks are due to my sister Tatyana for her beautiful drawings, which illustrate most of the new species, varieties, and *formae* described in this work; also to my secretary, June Sawrey-Cookson, for much assistance during proof-reading.

Finally, to many Eskimo friends—and I affirm that a man can find none better—I say “kuyounokssuaq” for their help as guides and hunters, and for their simple but sweet hospitality.

¹ Also Sir W. W. Smith (Edinburgh), whom I recently had the pleasure of visiting, and where I saw many of Taylor's specimens, though without being able to verify many of his doubtful reports.

PTERIDOPHYTA

POLYPODIACEAE

1. *Woodsia ilvensis* (L.) R. Br. in Trans. Linn. Soc. XI, p. 173 (1815).¹

The few specimens of this rare plant that have been taken within or near the area of the present treatise are quite typical, although somewhat reduced in size. Most notably is this the case with Sewall's plant from Frobisher Bay, which has fronds only 4-5 cm. high, and appears to represent the first authenticated collection of the species in the Arctic Archipelago.²

General Distribution. Circumboreal. Chiefly subarctic and alpine, but in West Greenland extending northwards to at least 73° N., and, according to Porsild (1920, p. 25), "undoubtedly occurring north of 74°" although "the precise limit cannot yet be settled."

E. Arctic Distribution. Apparently limited to the southeastern portions of our area, where it occurs in northern Labrador and southern and possibly also central Baffin.

Occurrence. Extremely rare, having been (at least in recent times) only twice collected within the area, although it is well known to the south. It forms tufts in rock crevices and on dry stony slopes, but has no known ecological importance or significance with us.

(C. BAFFIN: ? "Cape Searle" (Taylor 1863, p. 333). "Cumberland Gulf, Kingnait and Niatolik" (Taylor 1863, p. 333).)

5. S. BAFFIN: r. *Frobisher Bay*, Sewall 1927 (G).

7. N. LABRADOR: r. Grenfell Tickle, Potter and Brierly 1934 (G).

2. *Woodsia alpina* (Bolton) S. F. Gray, Nat. Arrang. Brit. Pl. II, p. 17 (1821).

W. hyperborea R. Br.

W. ilvensis β *alpina* (Bolton) Aschers. and Graebn.

Although Gelert (in Ostenfeld 1902), following Trautvetter, united the three widespread boreal *Woodsias* as mere varieties of one polymorphic species, the tendency nowadays is to uphold them as specifically distinct. In the case of *Woodsia alpina* I do this on the good authority of M. L. Fernald, C. A. Weatherby, T. M. C. Taylor, and C. Christensen, who have each seen (and confirmed as belonging to this species) at least one of the specimens cited below as having been collected within our Eastern Arctic area. These specimens are mostly rather small and slender, coming very near to *W. glabella* in their general appearance.

¹ This date is usually given as 1813, but Mr. S. Savage, Assistant Secretary to the Linnean Society, writes (*in lit.*) "I have tried several times to find some evidence that Trans. Linn. Soc. XI, pt. 1, was issued in 1814; but so far can trace only that a Fellow received his copy early in January 1815".

² This discounts the opinion of Simmons (1913, p. 39) that "all specimens from the Arctic Islands are referable to the var. *alpina*". Moreover, the indications being that Taylor (1863, p. 333) was familiar with all our three species of *Woodsia*, I now mention his records of *W. ilvensis* as being very possibly correct, although retaining a query as no specimens have been seen.

General Distribution. ? Apparently circumpolar, and rather high- as well as low-arctic and alpine. Northernmost record c. 79° N. in the Hayes Sound region of Ellesmere (H. W. Feilden 1875 and H. C. Hart 1875, specimens in Herb. Kew; also Simmons—cf. 1906, p. 183).

E. Arctic Distribution. Little known but evidently widespread, the few records being scattered almost all over the insular parts.

Occurrence. Apparently rare—only a few times collected and never found by Dr. Malte or by me. Habitat as in the previous and following species, and similarly of no known ecological importance or significance.

1. ELLESMERE: r. *Hayes Sound region*, Feilden 1875 (K); 'Edwards Grief,'¹ Hart 1875 (K); "Cape Viele" (Simmons 1906, p. 183).
4. C. BAFFIN: o. "Scotts Bay" (Taylor 1863, p. 333); "Sape Searle" (Taylor 1863, p. 333). *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B); "Niatolik" (Taylor 1863, p. 333).
9. ISLANDS IN HUDSON, ETC., BAYS: r. Nottingham Island, Bell 1884 (O) 28354; Coats Island, Porsild 1930 (O) 5862.

3. ***Woodsia glabella*** R. Br. apud Richardson in Franklin, Narr. 1st Jour., App., p. 754 (1823).

W. hyperborea var. *glabella* (R. Br.) Trautv.

This species is characterized by its narrowly lanceolate glabrous fronds, and, at least in the Far North, by the beautifully rounded lower pinnae. But in spite of the extremely thin texture and almost transparent nature of the latter, *Woodsia glabella* is one of the hardiest of all arctic plants. Not only does it occur almost as far north as there is land in the world, and on some of the most rigorously exposed mountain tops elsewhere, but it frequently persists on raised rocky areas that are free from snow in winter, thus getting away from the competition to which it is obviously very susceptible. In such situations, and in most of its far northern stations, it is diminutive in the extreme, the fronds in many cases failing to reach 2 cm. in height, but still showing up well in late summer when they turn a fine rusty brown. However, on the whole it seems to prefer the more sheltered and damp rock crevices that we normally associate with such small and delicate ferns, and there the fronds are generally at least 5 or 6 cm. high.

General Distribution. Circumpolar. All over the Arctic, including high latitudes; southwards on mountains. It reaches a latitude of around 79° N. in Ellesmere and Spitsbergen, and probably has its northernmost station a little north of this near Cape Agassiz² in northern Greenland (Wulff ex Ostenfeld 1923b, p. 223).

E. Arctic Distribution. Fairly general, if not almost complete, on ice-free land, being perhaps overlooked in the several large areas from which it has not yet been recorded.

¹ Single quotes imply doubt as to the whereabouts of a locality, although the specimen has been seen.

² Here it was apparently the last plant noted by Dr. Thorild Wulff before his death from starvation in 1917—See Ostenfeld (1923b, p. 223), who does not, however, confirm or even maintain this as a record in the body of his paper.

Occurrence. Easily the most plentiful of our Woodsias, but still in most places only occasional; indeed, far from being abundant, it will often not be seen at all in the course of a whole day's march. This is in part due to its diminutiveness; for actually it occurs, sparingly here and there, in almost all parts of our area at least as far as I have had an opportunity of exploring it. *W. glabella* grows chiefly in rock crevices or on open stony slopes, and almost always produces ripe sporangia in abundance. Contrary to the suggestions of Simmons (1906, p. 184, and 1913, p. 39) it does not exhibit any marked sensitivity to the composition of the substratum.

1. ELLESMERE: f. *Hayes Sound region*, several localities (cf. Simmons 1906, p. 183), e.g., 'Edwards Grief', Hart 1875 (K) 172 as "*W. hyperborea*", Lastraea and Twin Glacier Valleys, Simmons 1899 (K,C), Bache Peninsula, Malte 1927 (O,C). *South Coast*, several localities (cf. Simmons 1906, p. 184), e.g., Harbour Fiord, Simmons 1900 (G).
2. DEVON, ETC., ISLANDS: r. *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C). *Somerset Island*, Port Kennedy, Walker (K).
3. N. BAFFIN: r. Pond Inlet, Bazin 1935 (O,M); Arctic Bay, Polunin 1936.
4. C. BAFFIN: o. "Scotts Bay and Cape Searle" (Taylor 1863, p. 333). *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B); Nettilling Fiord, Soper 1925 (O).
5. S. BAFFIN: o. *Frobisher Bay*, Sewall 1927 (G). *South Coast*, Soper (Little).
6. MELVILLE PENINSULA: r. Repulse Bay, Olsen 1922 (C).
8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934.

4. *Cystopteris fragilis*¹ (L.) Bernh. in Schrad., Neu. Jour. I, 2, p. 27, (tab. II, fig. 9) (1806).

Even as Gelert remarks (in Ostenfeld 1902, p. 6), this species in the Arctic is "very variable, but the forms pass by numerous intermediate [stages] from one to the other". In much the same way did Simmons (1906, pp. 182-3) dismiss the subject of its variability, saying "of the many forms of this species" that "they seem.....to be so little constant and so connected by intermediate forms, that it is of rather little interest to distinguish them".² With this sentiment I wholly agree, the variation being for the most part in vegetative characters and in size; thus within our area the plant varies, apparently in direct relation to local conditions, from less than 5 to more than 30 cm. in height, and from pinnate to tripinnate. The most reduced specimens of exposed and far northern localities are referable to var. *arctica* Kuhn, which is, however, a mere form and only doubtfully worth distinguishing.

General Distribution. Cosmopolite—"the most cosmopolitan of all ferns", ranging from almost the farthest north land, through the north-temperate zone, to mountains in the tropics and even scattered stations in the southern hemisphere. Northernmost record 82° 30' N. in Grant Land, Ellesmere (Bartlett 1908—specimens in New York, Kew, and Copenhagen Herbaria).

¹ On the question of whether the specific name should be *fragilis* or *Filix-fragilis*, cf. Merrill (1935, pp. 127-131). It appears that the double trivial name first published by Linnaeus under *Polypodium* was an error, and that the current general usage of the simplified *C. fragilis* is fully justified.

² I am also unable to agree with Sutherland (1863, pp. 393-4) as to the segregability, at least in our area, of *Cystopteris alpina* Desv.

E. Arctic Distribution. Probably almost complete on ice-free land, but not yet recorded from the three least-known subdivisions of our area¹.

Occurrence. Although nowhere really abundant, this is the most common and widespread fern in our area. It will probably be found in any district where a proper search is made in suitable habitats; significantly enough it was the only pteridophyte brought back by Soper from the hitherto unknown west coast of Baffin. Generally inhabiting the moist and shady confines of rock and scree crevices, but may also occur in the open. It has no apparent preference for any particular kind of rock, seeming to grow wherever it can get a hold, alike on limestone or acidic gneisses or shales, and penetrating so far into caves that its light supply is greatly reduced. In such circumstances the fronds become etiolated and very thin (Polunin 1934b, p. 385). Although it ranges farther north than any other fern, *Cystopteris fragilis* is liable to be cut right back by early hard frosts, the slender fronds being reduced to brown shrivelled wefts, which are easily detached from the rootstock and soon blow away. It is of very little importance as a component of the vegetation.

1. ELLESMERE: f. *Grant Land*², 82°30', Bartlett 1908 (N,K,C). *Lady Franklin Bay*, Greely (G); *Discovery Harbour*, Hart (K); "Bellot Island and Cape Murchison" (Hart 1880, p. 306). *Hayes Sound*, several localities (cf. Simmons 1906, p. 183), e.g., *Fram Harbour*, Simmons 1899 (G), *Cape Sabine*, Feilden 1875 (K). *South Coast*, several localities (cf. Simmons 1906, p. 183), e.g., *Harbour Fiord*, Simmons 1900 (G,N,K,C), *Seagull Rock*, Simmons 1900 (C*).
3. N. BAFFIN: o. *Pond Inlet*, Freuchen 1924 (C); *Port Bowen*, Parry (B), Ross 1825 (B).
4. C. BAFFIN: f. "Scotts Bay" (Taylor 1863, p. 333). *Cumberland Gulf*, "Kekerten" (Taylor 1863, p. 333); *Kingnait*, Taylor 1860 (K); "Winter Harbour" (Taylor 1863, p. 333 incl. sub nom. var. *dentata*); *Pangnirtung*, Turner 1936³, MacKinnon 1936²; *Nettilling Fiord*, Soper 1925 (O). *West Coast*, *Camp Kungovik*, Soper 1929 (O).
5. S. BAFFIN: f. *Frobisher Bay*, Sewall 1927 (G); *North side*, Palmer 1929 (P). *Resolution Island*, *Acadia Harbour*, Potter 1937. *South Coast*, *Lake Harbour*, Malte 1928 and 33 (O,G,N,C), Soper 1931 (O), Polunin 1934 and 6; *Cape Dorset*, Robinson 1922 (G), Malte 1928 (O,G,C).
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K); *Burwell*, Hantzsch 1906 (D*), Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1931, 4, and 6; *Lady Job Harbour*, Potter 1937; *South shore Grenfell Tickle*, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. *Diana Bay*, Knapp 1936; *Cape Wales*, Bell 1884 (O); "Stupart Bay" (Payne ex Lawson 1887, p. 212); *Wakeham Bay*, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1936; *Sugluk*, Polunin 1936; *Wolstenholme*, Polunin 1934; *Cape Smith*, Malte 1928 (O,G).
9. ISLANDS IN HUDSON, ETC., BAYS: o. *Akpatok Island*, Polunin 1931 (B). *Southampton Island*, *York Bay*, Olsen 1922 (C); *Noksaruak*, Baird 1936.

¹ A note in the British Museum from Parry's second voyage reading "*Aspidium fragile*, Igloolik", accompanying a scrap of rhizome from which the leaves have disappeared, suggests that this form has already been found in the vicinity of Melville Peninsula (cf. Hooker 1825, p. 410).

² As was explained in the introduction (p. 24), the minor districts, being often purely arbitrary, their limits, like the order of the localities, may sometimes be changed to facilitate the citation of specimens in this flora.

³ Brought in by the Eskimo Sondloo from near the head of Pangnirtung Fiord.

5. **Dryopteris Phegopteris** (L.) C. Chr., Ind. Fil., p. 284 (1906).

Thelypteris Phegopteris (L.) Slosson

Phegopteris polypodioides Fée

This species has only recently been discovered within our area, not many miles north of the southern boundary, and its inclusion is still based upon this single collection. Although it is well known in West Greenland as far north as $65^{\circ} 40' 1''$, and I have seen a specimen from a few minutes farther north in East Greenland (Skerasaurak, coll. Kruuse 1899) where the climate is considerably harder, this is normally a "southern type" which elsewhere does not go far out of the forest. Hence, it is hardly to be expected in the Arctic Archipelago proper², although, occurring as it does all along the Atlantic coast of Labrador and on the Greenland side of Davis Strait, it might conceivably be found in one or another of the most sheltered and sunny fiords of the adjacent parts of Baffin Island.

General Distribution. Circumboreal, but scarcely even low-arctic. However, it reaches 66° N. in Siberia and has its northernmost known limit around 71° N. in Finmark (Norwegian Lapland: Polunin 1930, field notes).

E. Arctic Distribution. Apparently limited to northern Labrador in the extreme southeast.

Occurrence. Extremely rare. The one collection from within our area was "growing in a sheltered place among rocks about 50 feet from the shore."

7. N. LABRADOR: r. Bowdoin Harbour, Potter and Brierly 1934 (G).

6. **Dryopteris fragrans** (L.) Schott, Gen. Fil., tab. 17 (1834).

Thelypteris fragrans (L.) Nieuwl.

Aspidium fragrans (L.) Sw.

Polystichum fragrans (L.) Ledeb.

Nephrodium fragrans (L.) Richards.

Lastrea fragrans (L.) Presl.

All the material from within our area, characterized as it is by its "dense habit and rufescent chaffiness", belongs to the usual northern form, which was apparently the subject of Linnaeus' original *Polypodium fragrans*³—cf. Fernald (1923, pp. 1-4). With it is to be contrasted the much larger, laxer, and less scaly southern var. *Hookeriana* (Fernald) A. R.

¹ Cf. Gelert (in Ostenfeld 1902, p. 4). There is in the Gray Herbarium a specimen from Godthaab Fiord (Ujaragssuit, $64^{\circ} 50'$ N., coll. M. P. Porsild 1931) with a robust frond no less than 35 cm. high, and laden with ripening sporangia. Most Labrador specimens except from the extreme south are much smaller, as are those comprising the collection from within our area.

² It was long ago decreed that all the islands in Hudson and Ungava Bays and elsewhere north of the mainland should, for administrative purposes, be included in the Northwest Territories. Now that northern Labrador has been properly surveyed and mapped (cf. Forbes 1936) and the northernmost part (Killinek, including Port Burwell, Bowdoin Harbour, and some other of our minor localities) is officially recognized as an island, this has been claimed as part of the Northwest Territories. However, McLelan Strait (Grenfell Tickle), which separates Killinek "Island" from the mainland, is in many places only a few hundred metres wide and, being frozen across every winter, affords little if anything of a barrier to plant and animal migration; hence, for our present purpose it will, with the Button Islands which lie off its northern coast, be considered as if it formed part of the mainland of Labrador. Correspondingly, Digges, Farewell (Fairway), and some other islands which lie close to the shore of the continent, will be considered with their adjacent mainland regions, and not as part of the Arctic Archipelago, which must be kept apart as an important phytogeographical unit.

³ Sp. Pl. ed. 1, p. 1089, 1753.

Prince. In our area the species generally grows some 12-15 cm. high, but sometimes the fronds are no more than 5 cm. long, although even then the plant stands out more conspicuously than any of our other ferns, and, consequently, has been rather often collected. It favours dry ridges and rocky outcrops, being in the case of the northern form generally as xerophytic as its markedly xeromorphic appearance suggests. On old screes and bouldery moraines its dense tufts of rigid fronds may be so abundant as very locally to constitute an outstanding feature of the otherwise poor vegetation—most notably at Cape Smith, and, apparently, as far north as $78^{\circ} 52' N.$ on the east coast of Ellesmere, in the "Lastraea Valley", which is named for it (Simmons 1906, p. 182). This probably represents its northernmost station, as in Greenland it is not known to extend so far north, and as I can find no record or specimen to substantiate Hultén's claim (1927, p. 33) that it reaches $82^{\circ} N.$ in Ellesmere.

General Distribution. Circumpolar, the last sector having been filled in by its recent discovery in Lapland.¹ The head form, with which alone we are concerned, is rather high-arctic, extending to at least $78^{\circ} 52' N.$ (See above).

E. Arctic Distribution. Widespread as far north as the Arctic Circle, but getting rare northwards and only once recorded north of Lancaster Sound. It seems to be absent from some areas in the south; for instance I have never seen it growing on calcareous rocks.

Occurrence. Tending to be more gregarious than the other ferns within our area, this species may be quite abundant very locally in rather dry, sunny spots, in some places forming on open bouldery moraines a characteristic community with *Epilobium latifolium*, *Saxifraga tricuspidata*, *Hierochloe alpina*, and other plants of such open habitats (See also above). On the whole, however, it is rather uncommon, the following records tending (as a result of its conspicuousness and the attractiveness of all "ferns" to the casual traveller) rather to exaggerate its actual frequency.

1. ELLESMERE: r. *Hayes Sound*, Lastraea Valley, Simmons 1899 (G,K,C) 342.
3. N. BAFFIN: r. Pond Inlet, Bazin 1935 (O,M).
4. C. BAFFIN: r. *Cumberland Gulf*, Pangnirtung, Soper 1924 (O), MacKinnon 1936—brought in by Head Eskimo Ungmali; "Kingua" (Giese ex Ambronn 1890, p. 90).
5. S. BAFFIN: o. *Frobisher Bay*, Sewall 1927 (G). *South Coast*, Soper (Little Koukdjuak) River, Soper 1931 (O); Amadjuak Bay, Soper 1926 (O); Bowdoin Harbour, Robinson 1922 (G).
6. MELVILLE PENINSULA: o. Duckett Cove, Parry 1821 (B,C); Gore Bay, Freuchen 1922 (O,C). *Vansittart Island*, Georgina Island, Freuchen 1922 (O,C).
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O) 28699.
8. N. QUEBEC: f. Diana Bay, Knapp 1936; Payne River, Maltby 1920 (O); Payne Bay, Ney and Courtright 1936; Cape Wales (Bell 1884?) (O) 62626; "Stupart Bay" (Payne ex Lawson 1887, p. 212); Sugluk, Malte 1933 (O, G), Polunin 1936; Mosquito Bay, Low 1898 (O) 23034; Cape Smith, Malte 1928 (O,G,C), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, North side of White Island, Angel 1933 (W); South Bay, Sutton 1930 (G), Polunin 1936.
10. W. COAST HUDSON BAY: f. Wager Inlet, Macoun 1910 (O,G) 79228, Freuchen 1922 (K,C); Whale Point, Comer 1894 (G,K); Chesterfield, Tyrrell 1893 (O), and five others (O,G,C); Rankin Inlet, Macoun 1910 (O) 79229.

¹ According to a letter received at Harvard by Professor M. L. Fernald.

EQUISETACEAE

7. *Equisetum arvense* L., Sp. Pl. ed. 1, p. 1061 (1753).

This is a very variable species, presenting a great diversity of forms not only from different areas within the Eastern Arctic but also in different habitats in adjacent parts of the same district. These forms, although they are in many cases directly referable to one or another of the numerous varieties and *formae* that comprise this polymorphic species, nevertheless show frequent gradations into one another, and, moreover, may change almost entirely with local habitat conditions. Various trivial names have been given to specimens from our area, but it seems quite superfluous to delimit them; indeed I once toiled throughout a long summer day in the beautifully situated Gray Herbarium trying to do this, but then gave up the task as both hopeless and useless, agreeing with Simmons (1906, p. 180) that these variations "commingle without any distinction", and, accordingly, with Mr. C. A. Weatherby that they "don't amount to a string of beans".

However, the extremely depauperate, more or less decumbent specimens of the Far North, which also occur in the less favourable habitats elsewhere, may perhaps with some advantage be designated f. *alpestre* (Wahlenb.) Luer., to which similar forms from Spitsbergen and northern Siberia are referred, generally under the varietal name of Wahlenberg. But these specimens are often poorly defined and, being moreover directly related to local environmental conditions, are not considered worthy of individual citation.

With regard to the above name "alpestre", Victorin has recently published (1927, p. 36) "f. pseudo-alpestre n.f.....rarissimis et vix ramulosis trigoniis ramis", pointing out that Wahlenberg (1812, p. 296) described his β *alpestre* merely as "caulibus sterilibus decumbentibus", and that this was "après avoir explicitement décrit les rameaux du type comme tetragones" ("*Equisetum arvense*....ramis simplicibus recurvatis tetragonis"). But even if Wahlenberg's description is inadequate and he was referring to a somewhat coarser plant as Simmons has suggested (1906, p. 180), I think we may retain Wahlenberg's name for what is at best a mere ill-defined series, as most of the arctic European material is indeed triquetrous, and, moreover, indistinguishable from the American. Certainly the plant that Victorin (1927, p. 35) figures is very much coarser and more bushy than material from the Far North.

Except when growing in water, *Equisetum arvense* in our area hardly ever exceeds 25 cm. in height, being generally much lower, and, compared with most southern forms, rather slender and spare. A very slender submerged form occurs in a few places in the south of our area; but most frequent of all is the more or less decumbent form of open, damp, sandy or muddy areas, which become bound by it in the manner described by Hultén (1927, p. 51) and Polunin (1936, p. 384, and cf. Pl. XVI, fig. 7).

General Distribution. Circumpolar, extending from probably the farthest north land into temperate regions, and even into the southern hemisphere. Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 228).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Although insignificant and generally overlooked, this is with little doubt the most frequent pteridophyte in our area, being rarely absent from any extensive tract of marshy or moist muddy habitat except perhaps in the extreme north. The plants are generally sterile, or at least the only stems to be seen in late summer are; but fruiting axes have been found from time to time even in the Far North. Its chief ecological importance is as a pioneer on bare, sandy or muddy areas (See above); for although it is often fairly abundant, and in dryish habitats as well as its favourite wet ones, it is a feeble plant that rarely makes any real show in equilibrated phanerogamic vegetation. I have not observed in it any notable reaction to the chemical nature of the substratum; nor does it show marked preference for any particular type or duration of snow covering, occurring alike on rather exposed areas and in the damper parts of all except the innermost zones of the late-snow patches.

1. ELLESMERE: f. "*Lady Franklin Bay*" (Greely 1888, II, p. 15); "Bellot Island and Discovery Harbour" (Hart 1880, p. 306). *Hayes Sound*, Feilden (B); Cape Rutherford, Simmons 1899 (N,C). *South Coast*, Harbour Fiord, Simmons 1900 (G,C*); Big Valley, Simmons 1900 (K,C).
2. DEVON, ETC., ISLANDS: o? Dundas Harbour, Malte 1927 (O,G), Polunin 1936.
3. N. BAFFIN: f. Pond Inlet and near, Mathiassen 1923 (C), and six others (O,M,G,C). *Admiralty Inlet*, Arctic Bay, Malte 1927 (O,G,C), Polunin 1936.
4. C. BAFFIN: c. "Scotts Bay" (Taylor 1863, p. 334); "Kivitung" (Boas ex Ambronn 1890, p. 98); Cape Searle, Taylor 1860 (K,B); Exeter Fiord, Taylor (K). *Cumberland Gulf* (Taylor 1863, p. 334) (Kumlien 1879, p. 166); Pangnirtung, Malte 1927 (O,G), Polunin 1934; "Kingua" (Giese ex Ambronn 1890, p. 90). *Nettilling Lake*, Soper 1925 (O).
5. S. BAFFIN: c. Loks Land, Palmer 1929 (P). *Frobisher Bay*, Sewall 1927 (G); Point Brewster, Potter 1937; York Harbour, Potter 1937. *Amadjuak Lake*, Soper 1926 (O). *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C), Polunin 1934 and 6; between Amadjuak and Tchark-bach Fiords, Bell 1897 (O).
6. MELVILLE PENINSULA: o? *Vansittart Island*, Danish Island, Freuchen 1922 (O,C).
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O); Burwell, Borden 1904 (O), and six others (O,G,C,D*); Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Wakeham Bay (Borden ex Macoun in Low 1906, p. 321), Johansen 1927 (C), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Malte 1928 (O,G), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Mackenzie 1886 (O); Coats Island, Porsild 1930 (O*). *Southampton Island*, South Bay, Sutton 1930 (G), Manning 1934, Polunin 1934 and 6; Ranger Brook, Baird 1936; Nuwoodlik Hills, Baird 1936.
10. W. COAST HUDSON BAY: o? "Fullerton" (Borden ex Macoun in Low 1906, p. 321); Chesterfield, Freuchen 1923 (C, *pars* with *Juncus castaneus*) 712a, Polunin 1936.

8. ***Equisetum variegatum*** Schleich., Cat. Pl. Helvet, ed. 2, p. 27 (1807).¹

This species exhibits comparatively little variation within our area, although it is far from constant in habit and size. In some examples the aerial parts consist of only one or two prostrate shoots a few cm. long and

¹ I have not been able to check this reference, which is the one usually given for the species, but the name *Equisetum variegatum* was already published by Schleicher in 1800, on p. 21 of the first edition of his *Catalogus*.

less than 1 mm. in diameter (var. *anceps* Milde), in others of many stiff upright axes reaching a height of 25 cm. or more and showing a greater number of ridges in transverse section and of grooves at the top of each scale. But these variations are merely ecological, depending on local habitat conditions, and do not appear to have any taxonomic significance. Moreover, the species varies rather similarly in size all over our area, showing little better growth in the south than in the Far North. Thus a specimen in the Gray Herbarium collected by General Greely in northern Ellesmere, correctly identified in the handwriting of Sereno Watson, is almost as robust as any I have ever seen from the Arctic—so Simmons, who says (1906, p. 181) "I am a little doubtful about this plant, as I have seen no Ellesmereland specimens of it", can rest assured that he was correct in including it in his flora. Indeed I have myself found *E. variegatum* in Ellesmere on both my visits there, and growing fairly well and frequently. Nevertheless, because of its usual small size and extreme inconspicuousness it is very liable to be missed, however common it may be—which largely accounts for the very few collections of it that were obtained by the earlier explorers.

General Distribution. Circumpolar, and extending from probably the farthest north land southwards all over the Arctic and Subarctic, reaching the temperate belt on high mountains. Northernmost record southwest coast of Hendrik Island, 82° 3' N. in Greenland (Wulff ex Ostenfeld 1923b, p. 228).

E. Arctic Distribution. Fairly general and perhaps complete on ice-free land, but not yet recorded from Devon Island and some other large areas.

Occurrence. Very frequent and sometimes abundant in suitable habitats, though rarely at all obvious or of any ecological importance except as a secondary component of the vegetation. Almost always sterile. Although it prefers damp and open muddy soil where there is little competition from other plants, and grows biggest and best of all in shallow water or on wet silt around quiet pools, it is almost ubiquitous, at least in the southern half of our area. Indeed, it may be almost as common as *E. arvense*, in company with which it often grows, though never over any extensive tract.¹ It just lies obscure, dotted here and there in many different communities that are not too dry in summer.

1. ELLESMERE: o. *Lady Franklin Bay*, Greely (G); *Discovery Harbour*, Hart (K); *Craig Harbour*, Polunin 1934 and 6.
3. N. BAFFIN: o. *Pond Inlet*, Polunin 1934 and 6; near *Qorlortoq* in *Milne Inlet*, Freuchen 1924 (C); *Arctic Bay*, Polunin 1936.
4. C. BAFFIN: r? *Cape Searle*, Taylor 1860 (K,B).
5. S. BAFFIN: c. *Frobisher Bay*, *Point Brewster*, Potter 1937; *York Harbour*, Potter 1937. *Resolution Island*, *Acadia Harbour*, Potter 1937. *South Coast*, *Lake Harbour*, Malte 1927 and 8 (O,G,C), Polunin 1934 and 6; *Cape Dorset*, *Burwash* 1924 (O, p.min. with *Salix arctica*, etc.), Polunin 1934 and 6.

¹ M. P. Porsild (1920, p. 26) reports it as "frequently forming pure associations, especially on periodically inundated sand" in West Greenland, but such examples of this phenomenon as I have seen were very small in extent and appeared to be only temporary, the *Equisetum variegatum* soon giving way either to more rank and aggressive herbs or to the still more irresistible forces of physical action.

6. MELVILLE PENINSULA: o. Igloolik, Parry (K,B). *Vansittart Island*, Danish Island, Freuchen 1922 (O,C).
7. N. LABRADOR: f. Lacey Island, Potter and Brierly 1934 (G); Burwell, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937.
8. N. QUEBEC: f. Wakeham Bay, Malte 1928 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Malte 1928 (O), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O), Mackenzie 1886 (O). *Southampton Island*, South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1934 and 6; Nuwoodlik Hills, Baird 1936; Coats Island, Porsild 1930 (O*).

9. *Equisetum scirpoides* Michx., Fl. Bor.-Am. II, p. 281 (1803).

Like the last species, *Equisetum scirpoides* has been very generally overlooked in arctic Canada. Indeed as recently as 1913 Simmons had no record of it in his "Phytogeography of the Arctic American Archipelago," although the collection of Robert Bell cited below had already been mentioned in the literature, notably in Macoun's "Catalogue of Canadian Plants" (V, 1890, p. 252). Moreover, I have to admit that I missed it myself on my first two visits to our area; but now it has turned up in several places within or to the south of the Hudson Strait region, where it must nevertheless be considered as rather scarce.

Although the two species bear a superficial resemblance to one another and have often been confounded, *Equisetum scirpoides* is in reality abundantly distinct from all phases that I have ever seen of *E. variegatum*—not only in its habit, but also in its ecology and habitat preferences. Thus *E. scirpoides* is densely tufted, with slender and more or less tortuous stems, and grows in relatively luxuriant, well-drained grass or herb mats. Here it is markedly gregarious; indeed towards the edges of late-melting snowdrift areas, where drainage is good enough to allow the ground to dry out soon after the snow has melted, it may be so abundant as very locally to become a codominant in the generally turfy association—in spite of its probably slow growth and diminutive size (it is generally only 3-6 cm. high).

General Distribution. Circumpolar, arctic and alpine. Not normally thought of as high-arctic, but nevertheless reaching a latitude of nearly 80° N. in Spitsbergen (cf. Polunin 1933, field notes; also Scholander 1934, p. 15).

E. Arctic Distribution. So far known from only four localities in the extreme south, where it is fairly widespread.

Occurrence. Probably not common anywhere, and certainly rather rare in most places. The Lake Harbour material, which was the first record from Baffin, showed a few fertile axes; like the Port Burwell collection it was growing gregariously among grasses and dwarf *Salices* on a south-facing bank that formed the outside of a sheltered late-snow area.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.
7. N. LABRADOR: r. Burwell, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Nottingham Island, Bell 1884 (O, *pars* with *E. variegatum*), Mackenzie 1886 (O); Coats Island, Porsild 1930 (O*).

LYCOPODIACEAE

10. *Lycopodium Selago* L., Sp. Pl. ed. 1, p. 1102 (1753).

Most specimens from the south of our area and all from the Far North are small and have the leaves short and more or less appressed to the stem, thus being referable to var. *appressum* Desvaux (1827, p. 180). However, occasional larger specimens transitional to the typical form appear, even as far north as Cumberland Gulf, so it is considered inexpedient to uphold var. *appressum* as more than a reduced phase of exposed or northern areas, perhaps better termed f. *appressum* (Desv.) Gelert. Simmons, too, has remarked (1906, p. 179) that this form "does, however, go over without any definable limit into the larger common form."

It is reported by Victorin (1925, p. 95) of this species that "toutes les tribus sauvages du littoral de l'Alaska mâchent les tiges en avalent le jus pour produire une sorte d'intoxication"; but I can neither find any confirmation of this in the literature or by inquiry from travellers in the region, nor obtain any such effect on myself. Certainly the Eskimo of the Eastern Arctic regions do not use it or any other plant in this manner; indeed, except for the occasional dressing of wounds with *Sphagnum* and the use of various plants both higher and lower for food (generally quite irregularly; they will eat almost anything at times), they do not seem to apply any plants or plant products to their bodies either externally or internally, in marked contrast to their Indian neighbours and to the contentions of Hawkes (1916, pp. 36-7) who, to be sure, was chiefly concerned with the regions to the south of our area.

In most parts of the Eastern Arctic the individual plants of *Lycopodium Selago* average some 5 cm. in height and consist of as many main branches. However, in favourable moist localities the plants may be nearly 10 cm. high and have as many as eight branches, forming a light, yellowish green tuft, which is especially conspicuous when the bulbils are ripe and cause the uppermost leaves to spread out laterally. On the other hand, in exposed situations even in the south the plant may be reduced to 2 cm. or less, and to only 1-3 branches—a state that becomes more and more common the farther we go north.

General Distribution. Cosmopolite; all over the Arctic except perhaps on the most northerly coasts. Northernmost record Lady Franklin Bay, c. 81° 43' N. in Ellesmere (Greely 1888, I, p. 303).

E. Arctic Distribution. General and possibly complete on ice-free land, but not yet recorded from the north coast of Ellesmere or from some of the smaller northern islands of the Archipelago.

Occurrence. Common, especially in small patches, but rarely at all abundant. It is of little vegetational significance or ecological importance, being found in almost all types of area from dry heaths to wet marshes. However, it seems to avoid pure limestone, and in some localities, especially in the Far North, is limited almost entirely to snowdrift areas. Here it grows chiefly on damp patches of soil or cryptogams between the dominant *Cassiope tetragona* plants of the heathy zone, in a manner that I have

observed not only in Ellesmere but also in Spitsbergen. Propagation seems to be generally by bulbils that arise from the axils of the uppermost leaves of the stem and have, according to M. P. Porsild (1920, p. 27), "great power of migration and germination."

1. ELLESMERE: o. "*Lady Franklin Bay*" (Greely 1888, I, p. 303). *Hayes Sound*, several localities (Simmons 1906, p. 179), e.g., Buchanan Bay (Turnstone Beach), Feachem 1937, Twin Glacier Valley, Simmons 1899 (N,K), Cape Viele, Simmons 1899 (C). *South Coast*, Craig Harbour, Polunin 1934; "Fram Fiord and Harbour Fiord. . . very rare" (Simmons 1906, p. 180).
2. DEVON, ETC., ISLANDS: o. *Devon Island*, "Cape Warrender" (McClintock ex Markham 1909, p. 246); Dundas Harbour, Polunin 1934 and 6.
3. N. BAFFIN: o. Pond Inlet, Freuchen 1924 (C), Polunin 1934 and 6, Bazin 1935 (O,M); Too-loo-kan (Tulukuan), Soper 1923 (O).
4. C. BAFFIN: f. Clyde, Polunin 1934 and 6; "Kivitung" (Boas ex Ambronn 1890, p. 98). *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B); Pangnirtung, Soper 1923 (O,C), Malte 1927 (O,G), Polunin 1934 and 6; Dutch Polar Station, Soper 1924 (O, p. min. with *L. annotinum*); Kingua, Kumlien (G).
5. S. BAFFIN: c. Signuia near Cape Haven, Schuchert and White 1897 (G); Loks Land, Palmer 1929 (P). *Frobisher Bay*, Sewall 1927 (G); Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G), Knapp 1933, Polunin 1934 and 6; Upper Savage Islands, Parry (B); Cannon Inlet, Robinson 1922 (G); Bowdoin Harbour, Soper 1926 (O); Cape Dorset, Soper 1926 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. Fury and Hecla Strait, Parry 1822 (K*,C); Igloodik, Parry 1823 (B). *Vansittart Island*, Opposite Island, Freuchen (C); Danish Island, Freuchen 1922 (C); Repulse Bay, Parry (B).
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G); Cape Chidley, Bell 1884 (O); Burwell, Borden 1904 (O), and five others (O,G,C,D*); Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Knapp 1936; "Stupart Bay" (Payne ex Lawson 1887, p. 212); Wakeham Bay (Borden ex Macoun in Low 1906, p. 321), Johansen 1927 (C), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Johansen 1927 (C), Malte 1928 (O), Polunin 1934 and 6; Digges Island, Bell 1884 (O); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Salisbury Island, Buchan 1938; Nottingham Island, Bell 1884 (O), Johansen 1927 (C). *Southampton Island*, South Bay, Malte 1928 (O), Sutton 1930 (G), Manning 1934, Polunin 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Wager Inlet, Freuchen 1922 (C); 'Point Look Out,' Herd (K); Fullerton (Borden ex Macoun in Low 1906, p. 321), Macoun 1910 (O,N,C); Chesterfield, Polunin 1936.

11. *Lycopodium annotinum* L., Sp. Pl. ed. 1, p. 1103 (1753).

Fernald (1915, pp. 123-5) has given a detailed account of "The American variations of *Lycopodium annotinum*," from which it would appear that although much of the material from no farther south of our area than Hebron and Churchill (lat. 58° 46' N.) is referable to var. *pungens* (La Pyl.) Desv., all that has been collected within it belongs to another variety, which indeed must be mentioned as far more widely distributed in North America than had been supposed, viz.,

var. *alpestre* Hartm., Handb. i Skand. Fl. ed. 3, II, p. 56 (1838).

General Distribution. The species (and perhaps the variety) circumboreal, but as far as the Arctic is concerned a relatively southern (generally woodland) type. However, it reaches at least 72° 48' N. in West Greenland (cf. Porsild 1920, p. 28) and nearly as far north in East Greenland and Siberia.

E. Arctic Distribution. So far known only from the southern half of Baffin Island, and from Cape Eskimo on the west coast of Hudson Bay.

Occurrence. Apparently rare; it forms extensive and conspicuous light yellowish mats, but still has been collected only a very few times. Its importance, however, very locally where it does occur, may be considerable in the dry heathy vegetation of which it forms an integral part.

All var. *alpestre*:

4. C. BAFFIN: o. *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B); Pangnirtung, Turner 1934 (K); Dutch Polar Station, Soper 1924 (O); "Kingua" (Giese ex Ambronn 1890, p. 89).
5. S. BAFFIN: o. *Frobisher Bay*, York Harbour, Potter 1937. *South Coast*, Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Johansen 1927 (C), Polunin 1936.
10. W. COAST HUDSON BAY: r. Cape Eskimo, Cope 1934 (I,P).

Lycopodium alpinum L.

I can find no specimen to support the old and oft-quoted (but now questioned, cf. Simmons 1913, pp. 41-2) statement that this species occurs in "Baffin Land", and hence am inclined to exclude it from our flora, as there is not even a claim that it occurs anywhere else within the region. Moreover, the first and only original report of it from Baffin is that of Taylor (1863, p. 334) who gives it as "Coast to snow-line. . . . Common on both sides" (of Davis Strait); there can be practically no doubt that he meant *L. Selago*, which he omits from his list in spite of the fact that there are specimens of it collected and correctly named by him in the London herbaria! Nor indeed is *L. alpinum* to be considered as a truly arctic plant, but rather as a subarctic and alpine one. However, it reaches 71° 45' N. in West Greenland (cf. Porsild 1935, p. 24) and is now known to occur only just south of our boundary on the Atlantic coast of Labrador (Abbe 1936, p. 139), so it may well turn up within our area some time in the future.

Lycopodium alpinum L.

Gymnospermeae are unknown in our area, even if there have been suggestions (e.g., in "Canada's Eastern Arctic" 1935, map on p. 68) that the Hudsonian forest, which such species as *Larix laricina* (Du Roi) Koch, *Picea Mariana* (Mill.) B.S.P., and especially *P. glauca* (Moench) Voss (*P. canadensis* (Mill.) B.S.P., *P. alba* Link) characteristically dominate, attains or at least closely approaches the 60th parallel of latitude in northern Quebec. Actually, these suggestions were based on old reports, which appear in all cases to have been false (See Part IV), although it is still conceivable that outliers of one or more of the species named may some day be found within our area.

MONOCOTYLEDONEAE

POTAMOGETONACEAE

12. *Zostera marina* L., Sp. Pl. ed. 1, p. 968 (1753).

I have seen no specimen of the Eel-grass from within our area, but surprising as the "range extension" may seem, it being known elsewhere in the Hudson Bay region only from James Bay in the extreme south, there can be no doubt at all as to its occurrence at Cape Eskimo (Eskimo Point), lat. $61^{\circ} 5' N.$ on the west coast of Hudson Bay (cf. A. E. Porsild 1932, p. 91).¹ Another surprise is that it should grow at all where the water is so cold—probably almost always below $10^{\circ}C.$ (A. E. Porsild 1932, p. 94), although Setchell (1929, p. 425) distinctly says "temperatures below $10^{\circ}C.$ result in practically complete inhibition of even the vegetative activities of the *Zostera*." It is also remarkable that it should grow in places so exposed to the action of locally formed ice (cf. Lewis 1931, p. 61) as must be the beds at Cape Eskimo. For although it there grows in water rather deeper than its usual habitat in temperate climes, it is, according to verbal information from Mr. T. C. Carmichael of the Hudson's Bay Company, who has known of its occurrence at Cape Eskimo for a number of years, often plentifully exposed at low spring-tide.

Setchell (1929, p. 426) states that anthesis occurs only at temperatures above $15^{\circ} C.$ and none has yet been seen in several years of observation at Cape Eskimo, the plant reproducing merely by vegetative means.

With little doubt *Zostera* has migrated into Hudson Bay since the last ice retreat—whether by agencies available at the present day, or earlier, along the shores of a possible one-time marine connection (the "Champlain Sea") from the Gulf of St. Lawrence to James Bay, in the manner suggested by Potter (cf. 1932), I am not prepared to say. However, concerning the view of this latter authority, it must be mentioned that not merely *Zostera* but also several others (most notably "*Carex maritima*", "*Carex glareosa* var. *amphigena*", and "*Carex norvegica*") of the eleven plants that he mentions in support of his view, are now proving to be much more widely distributed in the north than had been thought, and may easily have migrated by the present-day sea connection through Hudson Strait, where indeed at least two of them now grow plentifully.

General Distribution. Circumboreal but not really arctic, although occurring in West Greenland at lat. $64^{\circ}23' N.$, and farther north still on the arctic coast of continental Europe. Thus in Norwegian Lapland, where the sea water is still tempered by the Gulf Stream, *Zostera*, as I have myself seen (1930 field notes), is quite abundant in places, although probably having its northern limit around $71^{\circ} N.$ in these regions.¹

E. Arctic Distribution. Apparently limited to the extreme southwest corner.

¹ There are now many additions that have to be made to the distribution map given by Ostenfeld (1927, No. 38).

Occurrence. Only in the one station of Cape Eskimo, as explained above, but there growing abundantly, forming extensive mats in the shelter of the bars below the Hudson's Bay Company trading post.

10. W. COAST HUDSON BAY: r. Cape Eskimo (O*—also T* according to a letter from Dr. T. M. C. Taylor).

13. **Potamogeton filiformis**¹ Pers., Synops. Plant. I, p. 152 (1805).

Most of the material from within our area is dwarfed and, growing only 8-15 cm. high and having a short spike, is referable to

var. **borealis** (Raf.) St. John in Rhodora XVIII, p. 134 (1916).

However, this seems to be a mere northern reduction phase, poorly defined in that it shows, even towards the northern limit of its range, almost all stages of gradation into the typical form—as for example in my material from Cape Smith, which in the flowering stage has the whorls of the inflorescence separated by as much as 5-7 mm. Thus, some individuals might almost equally well be referred to the typical form, to which indeed all the material from Churchill and Port Harrison just south of our area appears to belong.

General Distribution. The species circumboreal, and, at least in America, ranging farther north than any other member of the genus. Northernmost record Theodolit Plateau, 74° 24-5' N. in East Greenland (Gelting 1934, p. 220).

E. Arctic Distribution. Apparently limited to the western half of the extreme south, being recorded only from the coasts of Hudson Bay.

Occurrence. Not merely the only member of this genus known to grow within our area, but by far the commonest for some distance to the south. However, within our area it seems to be very rare, unless perhaps it has been overlooked in regions adjacent to its two known stations; for I have often observed it in Greenland and Iceland, and south of the 60th parallel around Hudson Bay, to be abundant quite locally in suitable shallow pools of fresh or slightly brackish water having a soft clay or muddy bottom in which it can root, and whence it can send its axes to the surface of the water. It fruits plentifully within our area, as it does also to the south.

8. N. QUEBEC: r. Cape Smith, Polunin 1936 incl. var. *borealis*.

10. W. COAST HUDSON BAY: r. Rankin Inlet, Macoun 1910 (O) var. *borealis* fide St. John—orig. as "P. marinus".

GRAMINEAE

14. **Hierochloa**² **odorata** (L.) Wahlenb., Fl. Ups., p. 32 (1820).

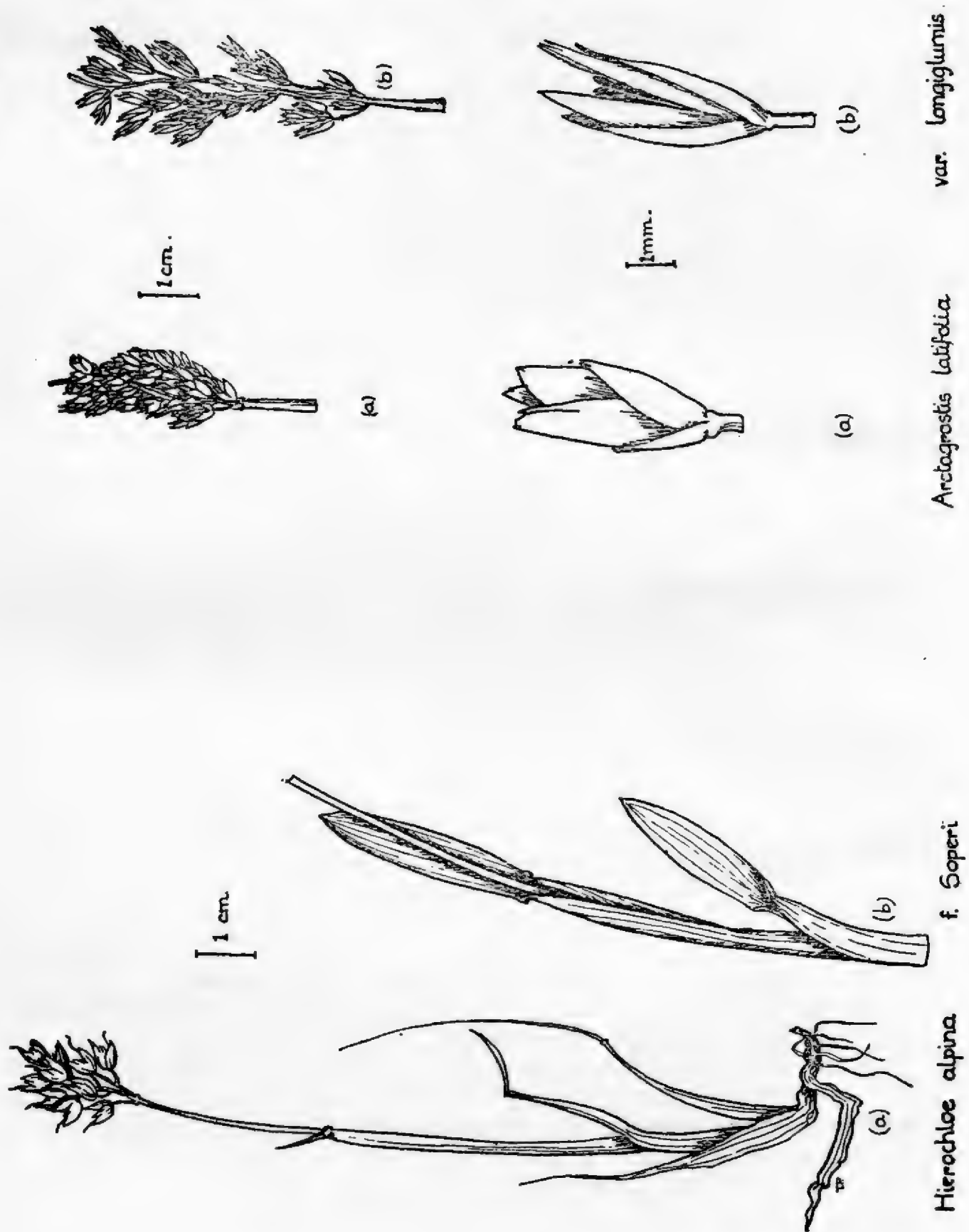
H. borealis (Schrad.) R. and S.

Much of my material of this species, both from Port Burwell within our area and from the stations to the south, I would refer to var. *fragrans* (Willd.) Richter "...calyce floribus multo longiore..." (See Fernald 1917,

¹ Published as "filiforme", but, as kindly pointed out by Mr. J. E. Dandy (*in lit.*), the generic name *Potamogeton* is masculine under the International Rules, even if Linnaeus originally considered it neuter.

² This is the rendering in the list of *nomina generica conservanda*.

PLATE I



p. 152) if only this could be maintained as a distinct variety. It seems, however, to be a mere tendency of the species that scarcely deserves designation even as a form, and which Professor Fernald himself in rewriting Gray's Manual is now entirely ignoring.

Besides this variation in the length of the glumes, the species varies greatly in stature. At Port Burwell it is generally limited to 15-25 cm. in height, though I have measured specimens up to 32 cm.; but only a little to the south, at Port Harrison and Churchill, it almost always exceeds 40 cm. and frequently reaches 60 cm. It is one of the most stately and beautiful of all our plants.

General Distribution. Fully circumboreal, Giesecke's old record for Greenland, which was excluded by Lange (1880, p. 157) and all subsequent authors as improbable, having been very recently substantiated by fresh finds on the part of Magister Johs. Grøntved and Cand. Real. Eilif Dahl.¹ With us purely a southern type, not really arctic at all. The northernmost limits are around 71° N., in Scandinavia (near Gamvik, cf. Ove Dahl 1934, p. 242) and near the mouth of the Yenisei in Siberia (cf. Hultén 1927, p. 86).

E. Arctic Distribution. Apparently limited to northern Labrador in the extreme southeast.

Occurrence. In its one station abundant or even codominant very locally, on sheltered grassy slopes having good drainage but nevertheless a lasting supply of fresh water percolating from above.

7. N. LABRADOR: 1. Burwell, Malte 1928 (O,G,C), Polunin 1931, 4, and 6.

15. *Hierochloe alpina* (Sw.) R. and S., Syst. Veg. II, p. 515 (1817).

This is one of the most widespread and characteristic of arctic grasses, in many places growing with greater robustness than any other. As a rule it varies little except in size, which seems to be a function of local habitat conditions, for even in the south it may be reduced to no more than 10 cm. in height, whereas in almost any part of our area it may reach 40 or even 50 cm. However, there is one variation that is so marked that the late Dr. Malte at first labelled it as a new species, although apparently ignoring it afterwards, as I can find no mention of it in his publications or even in his notes. This phase gives the appearance of being highly nitrophilous, as it is in all senses crass, with the spikelets larger, broader, and often paler than in the typical form, and the foliage towards the base less characteristically reddish lilac than usual. The most marked feature is, however, the breadth of the sheathing leaves, whose blades where free from the culm are conspicuous and 4-7 mm. broad instead of being inconspicuous, short, and only 1-3 mm. broad. Altogether it seems sufficiently striking to uphold as a distinct form, whose name should be that of its collector, who has contributed so much to our knowledge of the third largest island in the world:

f. *Soperi* n. forma

¹ Cf. Grøntved (1937, p. 253).

A forma typica differt planta multo crassior, laciniis foliorum 4-7 mm. latis. Type in Herb. Ottawa: J. D. Soper, Nettilling Lake, Baffin Island, No. 125699, July 9, 1925. Figure on Plate I.

General Distribution. The species circumpolar, all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 231).

E. Arctic Distribution. Probably complete on ice-free land, but not yet recorded from the extreme north of Ellesmere.

Occurrence. Rare in northern Ellesmere (Simmons 1906, p. 179) but otherwise common almost all over our area, and often abundant to locally dominant. A marked xerophyte, it grows chiefly on dry and open, sandy or gravelly areas, or more rarely in closed xerophilous heath, thriving even where the surface is bare of snow and windswept in winter. It is especially characteristic of the tops of exposed mounds if these are capped by a boulder, for on such prominences perch all manner of birds, resting to swallow their food and manure the soil around, with the result that *Hierochloe* grows luxuriantly in the shelter of the boulder. Here it forms a conspicuous yellow tuft, in many places associated with such species as *Stellaria longipes* and the green alga *Prasiola crispa*.

1. ELLESMERE: o. *Hayes Sound*, Feilden 1875 (B); "Deserted Village" (Hart 1880, p. 304); Twin Glacier Valley, Simmons 1899 (N,K,C). *South Coast*, Wetherill 1894 (G); Craig Harbour, Soper 1923 (O), Polunin 1934 and 6.
2. DEVON, ETC., ISLANDS: f. *Devon Island*, Cape Sparbo, Anderson 1928 (O); Cape Warrender, Ross 1824 (K); Dundas Harbour, Soper 1923 (O,C), Malte 1927 (O,G), Polunin 1934 and 6; between Beechy Island and Northumberland Sound, Lyall 1852 (K). "*Somerset Island*" (Ross ex Hooker 1826, p. 129).
3. N. BAFFIN: c. almost everywhere—nineteen records from eleven localities (O,M,G,N,C, etc.).
4. C. BAFFIN: c. almost everywhere—seventeen records from ten localities (O,G,N,B,K,C, etc.), incl. f. *Soperi*, Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: c. almost everywhere—sixteen records from eleven localities (O,G,N, etc.), incl. "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 418, sub nom. *Savastana alpina* (Sw.) (Scribn.).
6. MELVILLE PENINSULA: c. almost everywhere—ten records from seven localities (O,B,L,C, etc.).
7. N. LABRADOR: c. Burwell, Bell 1884 (O), and seven others (O,G,N,K*,C); Bowdoin Harbour, Potter and Brierly 1934 (G); Lady Job Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. almost everywhere—sixteen records from eleven localities (O,G,C).
9. ISLANDS IN HUDSON, ETC., BAYS: f. Nottingham Island, Johansen 1927 (C). *Southampton Island*, White Island, Mathiassen 1922 (C*); York Bay, Hooper 1821 (L, note only); South Bay, Sutton 1930 (G), Manning 1934, Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Fullerton, Borden 1904 (O); Chesterfield, anon. 1792 (B), and six others (O,G,N,C).

16. ***Hierochloe pauciflora*** R. Br. in Suppl. App. Parry's 1st Voyage, p. ccxciii (mispaged exciii) (1824).

This beautiful little species, characteristic of the arctic tundra and hitherto hardly known anywhere south of the Arctic Circle except in the northern Pacific region (cf. Hultén 1926, map 19), had until recently

been collected only a few times. Generally it is overlooked on account of its small size, slender and inconspicuous form, and grassy-marsh habitat. But now in the Canadian Eastern Arctic it is known from many places that lie outside the limits given by Hultén, particularly since 1936 when it turned up at almost every point of call of our expedition (it was noted or collected no fewer than twenty-six times) from Devon Island in the north to Wakeham Bay on the mainland of Quebec, and even farther south at Cape Smith on the east coast of Hudson Bay. It seems to vary hardly at all, even the height being remarkably constant and rarely outside the normal limits of 15 and 20 cm. except in single, unusual examples.

General Distribution. Nearly circumpolar and low- to rather high-arctic, but apparently absent from Greenland and western Europe. Northernmost known stations are around 74°40' N. on Taimyr Peninsula, Novaya Zemlya, Devon Island, and Melville Island (C. J. Beverley (1820) and others—specimens in Kew, British Museum, Copenhagen, etc., Herbaria).¹

E. Arctic Distribution. Widespread and possibly almost complete, but not yet known from Ellesmere. Apparently only just reaching our southern boundary.

Occurrence. Not infrequent in freshwater marshes by the margins of pools, where it may be so abundant as to contribute materially to the density of the sward.

2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Malte 1927 (O,G), Polunin 1936. "*Somerset Island*" (Parry ex Hooker 1826, p. 129).²
3. N. BAFFIN: r? Arctic Bay, Polunin 1936; ?"Port Burwell"³ (ex Martens 1859, p. 19).
(C. BAFFIN: ? no authenticated record, the specimens of Taylor (1863, p. 332, repeated by other authors) that I have seen in Herb. Kew from "Cumberland Gulf" being in reality *Dupontia Fisheri* and *Deschampsia caespitosa* s.l.)
5. S. BAFFIN: r. Cape Dorset, Polunin 1934.
6. MELVILLE PENINSULA: o. Igloolik, Parry 1822 (B,C), Fisher ? no date or loc. but "Parry 2nd voyage" and most likely from here (B); "Neerlo Nakto" (ex Hooker 1825, p. 410).
8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Mansel Island, Leechman 1936. *Southampton Island*, South Bay, Polunin 1936; Cape Low, Angel 1933 (W); Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o. Chesterfield, Malte 1928 (O,G,C), Polunin 1936.

Besides the above, I have seen the following specimens, which are without definite locality but which probably come from our area: (1) "Arctic America. James Ross 1829-33" in Herb. Gray; (2) "Arctic regions. Parry 2nd voyage ad Dr. Greville" in Herb. Kew; and (3) a scrap in Herb. Kew simply labelled "Capt Parry".

17. *Alopecurus alpinus* Sm., Fl. Brit. III, p. 1386 (1804).

This may, as Simmons (1906, p. 177) asserts, be the commonest grass in Ellesmere, but I cannot agree with his implication (1913, p. 43) that it is the commonest one of the whole Arctic Archipelago (a distinc-

¹ The old reports of the occurrence of this species still farther north in Spitsbergen are not now taken seriously (cf. Scholander 1934, p. 78).

² This record like several others from Parry's third voyage, is confirmed by a specimen that has recently been seen in a small "special" collection in the British Museum.

³ Probably a mistake. See footnote on p. 64.

tion which I feel should at least be shared by *Poa arctica* and possibly by some other species), or that it grows nearly everywhere.¹ But however this may be, it is certainly one of our commonest and most ubiquitous grasses, and, largely in relation to different habitats, shows a wide range of variation. Most striking is the luxuriant form sometimes occurring in especially favourable manured habitats, which has the spike narrowly oblong, and elongated sometimes to 4 cm. (e.g., Pond Inlet, Polunin 1934, No. 671), instead of subglobose and less than 2 cm. long as is usual. However, this form is so obviously related to local nutritional differences that it is not considered worthy of a name. For similar reasons we may dismiss the extraordinary variations in robustness and height (from 5 to 50 or more cm.) that can be observed almost anywhere within our area. Other variations (which I first noticed in 1933 in Spitsbergen, and thought might be of taxonomic importance until I found that they were widespread and largely seasonal), are concerned with the awn, and with the colour of the spikelets, which for a time around anthesis may be a beautiful deep purple.

General Distribution. Circumpolar; all over the Arctic, including the northernmost coasts.² Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 230).

E. Arctic Distribution. Probably complete on ice-free land, but possibly absent from some of the southernmost mainland tracts.

Occurrence. Except in some of the mainland regions of the extreme south, this species is common almost everywhere. It seems indifferent to whether or not it is covered with snow in winter, and moreover shows great tolerance to varying conditions of water supply, growing almost as well on ground that is dry most of the summer as in shallow water along the margins of tarns or streams. Indeed it is liable to occur and be of ecological importance in almost any sufficiently damp habitat whether open or closed. Sometimes it dominates considerable tracts in marshy places or around habitations of man or beast, showing a partiality for manured areas, on which it may grow with remarkable luxuriance even in the most exposed places in the Far North.

1. ELLESMERE: c. everywhere—numerous records from almost all localities.
2. DEVON, ETC., ISLANDS: c. almost everywhere—fourteen records from thirteen localities (O,T,G,K,etc.).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: o. Port Burwell, Porsild 1930 (O*), Polunin 1934; Bowdoin Harbour, Potter and Brierly 1934 (G).

¹ For instance, it appeared to be very rare and localized on Akpatok Island, where it was found only once (Polunin 1935, p. 171).

² Thus Hart (1880, p. 303) writes "tufts of grass" at Ward Hunt Island, lat. 83° 4', noticed by Lieut. Aldrich, most likely belonged to this species". Ward Hunt Island is almost the northernmost land in our area, and indeed in the world.

8. N. QUEBEC: c. almost everywhere—eleven records from seven localities (O,G,C, etc.).
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from all the islands.
10. W. COAST HUDSON BAY: c. Wager Inlet, Birket-Smith 1923 (C); Depot Island, Freuchen 1923 (O,C); Chesterfield, Birket-Smith 1922 (C), Freuchen 1923 (C), Gardner 1933 (G), Polunin 1936; Cape Eskimo, Macoun 1910 (O); Tikerarjuaq, Birket-Smith 1923 (C).

18. *Arctagrostis latifolia* (R. Br.) Griseb. in Ledeb., Fl. Ross. IV, p. 434 (1853).

Colpodium latifolium R. Br.

Although within our area the general run of material conforms well with Robert Brown's detailed description in *Chloris Melvilliana* (1824, p. clxxxvi) of his original *Colpodium latifolium*, more discriminating collecting in the field, and examination of abundant material in herbaria, show that this grass is in effect an atrocious *typus polymorphus*. Variations in size and robustness we expect—and get—but of taxonomically more significant tendencies exhibited by the species within our area the following may be enumerated:

(1) A form to which transitions are shown in many places, and which has been collected in its extreme at Cape Dorset (Polunin 1934, No. 298f) and Chesterfield (Polunin 1936, No. 2242), has the lemmas all tipped with a short but distinct dark awn. It is evidently

f. *aristata* Holmb. in Hartmans Handb. i Skand. Fl. rev., p. 141 (1922),

as this is described as "Yttre blomfj. med tydligt, 1-2 mm. långt, krökt borst".

(2) Whether or not the genus should be regarded as monotypic, as is contended by Holm (1922, p. 4B), it clearly represents only one major species in the Canadian Eastern Arctic. However, there occur not far outside our area, to the south and west, tall, slender forms (e.g., Churchill, Polunin 1936, No. 1924) with the lax panicle and broad sheathing leaves of var. *arundinacea* Trin. (*Arctagrostis arundinacea* (Trin.) Beal), and this I mention because most of the specimens from the extreme north of our area are also reminiscent of this variety (cf. Simmons 1906, p. 177), although differing in their weak stems, low stature, and imperfectly developed spikelets.

(3) A plant, so strikingly different from anything hitherto known that I was advised by some American taxonomists to describe it as a new genus, but which I am now convinced is merely an anomalous form of *Arctagrostis latifolia*, was collected at Pond Inlet in 1934 (Polunin, No. 719). It grew on open gravel around the margin of what had previously been a freshwater pond, but from which the water had, according to the Rev. Jack Turner, suddenly disappeared 2 years previously as the result of a minor landslide. In this changed habitat it was exhibiting its adaptability and "enormous hardiness" in a manner comparable with that described by Sørensen (1933, p. 135). For it persisted as a soft, creeping rhizome from

which arose numerous broad leaves and occasional rather feeble axes about 15 cm. high, the upper 4-5 cm. of the axis constituting a slender, interrupted panicle consisting of only a few spikelets (in anthesis), and having the glumes broad and often two- or three-notched. When I visited the same spot 2 years later the water had risen again and this plant had completely disappeared, its place being taken by a diversity of less utterly anomalous forms, which were all unmistakably *Arctagrostis latifolia*. However, these in some cases showed characters transitional to the anomalous plant collected in 1934, which dispelled all doubts as to where the latter should be placed. Common experience in horticulture teaches us that it is just such a drastic and sudden change of habitat or of at least one local environmental condition that is most liable to produce the most strikingly diverse forms, and here, illustrated further by the series of phases collected around this lake in 1936, we have it happening in nature in the Arctic!

(4) In some places, especially on the west coast of Hudson Bay, the whole plant is unusually slender, with the leaves and panicle long and very narrow, and the latter often interrupted (e.g., Chesterfield, Polunin 1934, No. 2185). But as this is merely an extreme phase of a tendency frequently exhibited elsewhere (I have seen very similar forms from West Greenland and Novaya Zemlya), I would not feel justified in upholding it as worthy of a name.

(5) Most of the cotype material of Robert Brown's *Colpodium latifolium*, collected by the Parry Expedition on Melville Island in 1820, has the outer glumes ovate-lanceolate and 2-2.5 mm. long. However, one specimen on the type sheet in the British Museum and many of the plants from southern Baffin Island and Akpatok Island have the outer glumes considerably longer, and from Nettilling Lake in the interior of Baffin comes a collection having them narrowly lanceolate and 4-5 mm. long, and this, the panicle being moreover unusually lax, seems to typify a well-marked variety:

var. **longiglumis** n. var.

Spiculis multo longior quam typo, glumis exterioribus 4-5 mm. longis; paniculis praeter solitum laxis saltem in anthesi. Type in Herb. Ottawa, cotype in British Museum; J. D. Soper, Foxe Island, Nettilling Lake, Baffin Island, No. 125636, Aug. 24, 1925. Figure on Plate I.

(6) Finally, it must be mentioned that this polymorphic species is occasionally attacked by a smut with rather striking results, the grains becoming dark and greatly swollen.

General Distribution. Circumpolar; all over the Arctic. Northernmost record Cape Benet, 83° 2' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 230).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Generally abundant, and almost everywhere one of the most characteristic plants of damp tundra areas, which it frequently

dominates as a luxuriant and essentially pure stand 30-50 cm. high. In the north, at least, fructification seems to be very deficient, although flowers are generally produced.

1. ELLESMERE: c. almost everywhere—numerous records from about twenty localities northwards to Cape Richardson ($82^{\circ} 35'$), Hansen 1920 (C).
2. DEVON, ETC., ISLANDS: c. *Devon Island*, Dundas Harbour, Polunin 1934 and 6; Cuming Creek, Borden 1904 (O) 63096; 'Wellington Channel', Lyall 1853 (K). *Somerset Island*, Parry 1825 (K); Fury Beach, Neill 1825 (K)¹; Port Kennedy, Walker 1858 (K).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. var. *longiglumis*, Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. f. *aristata*, Cape Dorset, Polunin 1934.
6. MELVILLE PENINSULA: c. Igloolik, Edwards 1822 (B), Parry 1822 (G,B,C). *Interior* (Rae 1850, p. 215); Palmer Bay, Bangsted 1922 (C). *Vansittart Island*, Bangsted 1923 (C); Danish Island, Freuchen 1922 (C); Repulse Bay, Hooper 1821 (L), Olsen 1922 (C).
7. N. LABRADOR: r? Cape Chidley, Bell 1884 (O); Burwell, Polunin 1936.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. numerous records from all major islands, incl. f. *aristata*, Southampton Island (South Bay), Malte 1928 (O,G), Sutton 1930 (G).
10. W. COAST HUDSON BAY: c. numerous records from almost all localities, incl. f. *aristata*, Chesterfield, Polunin 1936.

19. *Agrostis borealis* Hartm., Handb. i Skand. Fl. ed. 3, II, p. 17 (1838).

All specimens from within our area have relatively short spikelets and low culms, and so fall within the limits of the typical form, which is the usual one in the north (cf. Fernald 1933, p. 204). However, they still show a considerable degree of variation, some from Chesterfield exhibiting a tendency towards the still shorter spikelets and more constantly erect habit of *A. canina* (See below).

General Distribution. ? Possibly circumboreal, but as yet unknown from the greater part of Asia. Alpine and low-arctic, probably having its northernmost station inland of Prøven, $72^{\circ} 30'$ N. in West Greenland (Thorbjørn Porsild ex M.P. Porsild 1920, p. 34).

E. Arctic Distribution. Southern parts of Baffin, and all the mainland regions of the extreme south.

Occurrence. Occasional in the mainland regions of northern Labrador, Quebec, and Keewatin. Apparently rare in Baffin, where it is not recorded north of the Arctic Circle. Grows chiefly on dry and rather exposed gravelly banks, or sometimes in grassy depressions where the snow drifts deeply in winter and melts only rather late in the spring, and where it may be locally quite frequent, as is emphasized by the persistence of the old dead culms. Flowers and fruits plentifully, although generally only about 10 cm. high and rarely exceeding 15 or 18 cm.

4. C. BAFFIN: r. *Cumberland Gulf*, Taylor 1860 (K) as "*Agrostis vulgaris*"; Kingnait, Taylor 1860 (K) as "*A. vulgaris*."
5. S. BAFFIN: r. Lake Harbour, Malte 1928 (O,G,C).

¹ The label gives no exact locality, but this is presumed from the date "Aug. 1825" when Parry's expedition was stationed at Fury Beach.

7. N. LABRADOR: o. Burwell, Malte 1927 and 8 (O,G,C), Polunin 1936; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G,C), Polunin 1934 and 6; Cape Smith, Malte 1928 (O,G,C).
10. W. COAST HUDSON BAY: l. Chesterfield, Malte 1928 (O,G,C), Polunin 1936 incl. several numbers apprg. *A. canina*.

Agrostis canina L.

This species was recorded by Simmons (1913, p. 44) from Cumberland Gulf, on the basis of specimens collected by Taylor in 1860 and labelled and published as *A. vulgaris*. The specimens in question, which I have seen in the herbaria of the British Museum and Kew Gardens, clearly belong to the usual wide-ranging northern *A. borealis*; and, as no one has since claimed to have found good *A. canina* within or even near our area, I am inclined to exclude it from the present flora—the more so as it occurs in West Greenland only in the south, and is not at all widely distributed in North America except as an introduced plant.

Taylor's report (1863, p. 332) of *Agrostis rupestris* Willd. from Baffin is entirely in error, the specimens so named that I have seen in Herb. Kew belonging instead to *Calamagrostis neglecta* (q.v.).

20. ***Calamagrostis deschampsoides* Trin., Ic. Gram. III, tab. 354 (1836).**
Deyeuxia deschampsoides Vasey

The discovery of this plant growing plentifully at several points on the west coast of Hudson Bay seems to constitute an enormous range extension, for I can find no record of its having been found in the New World anywhere except in the extreme west. Thus Macoun (1888, p. 204) gave the range as "California to Alaska," remarking "we know nothing of this species," and as recently as 1927 Hultén (p. 100) had nothing to add to this except the implication that the species had probably been often overlooked. It seems to be entirely new to Canada. The plants growing within our area are small (mostly about 15 cm. high) and have spikelets generally of a fine dark purple, thus conforming well with the type but being in contradistinction to those from Churchill, not so far to the south, which will be dealt with in Part IV of this series.

General Distribution. ? Possibly circumboreal, but so far known only from northern Eurasia, Pacific North America, and the west coast of Hudson Bay. A general northern, but scarcely arctic, type.

E. Arctic Distribution. Apparently limited to the coast of Keewatin in the extreme southwest.

Occurrence. Locally plentiful in brackish marshes and other more or less saline habitats, including at Chesterfield considerable hinterland areas that have only recently been raised out of the sea. This halophytic

tendency, apparently never before noted or at least not recorded, may well account for its absence from many continental areas of northern Asia and America, as well as for its having been often overlooked even in regions where it abounds in suitable habitats (cf. *Puccinellia* spp. and *Carex ursina*).

10. W. COAST HUDSON BAY: 1. Chesterfield, Malte 1928 (O,G), Polunin 1936; Cape Eskimo, Macoun 1910 (G, pars) 79127 as "*Poa flexuosa*."

21. *Calamagrostis purpurascens* R. Br. apud Richardson in Franklin, Narr. 1st Jour., App., p. 731 (1823).

C. arundinacea (L.) Roth var. *purpurascens* (R. Br.) Fedtsch.

The Arctic Bay material of this species belongs to the typical form, but that from Pond Inlet is so different that it was at first noted by the late Dr. Malte as "n. sp.", although never fully diagnosed or published. Dr. Malte seems later to have decided that it was not after all specifically segregable, and this is my opinion. In his field notebook Dr. Malte wrote of the Pond Inlet form "This does not grow in dense tufts like *C. purpurascens* but in dense, tough matted patches." It also differs in the stouter and broader panicle, the slightly longer and almost smooth glumes, and the long (8-9 mm.) and conspicuously projecting awn; also in the panicle branches being less densely hairy than in the type. Its most marked character is, however, the length of the hairs on the rudiment of the rachilla, which are so long as almost to reach the tip of the lemma, whereas in ordinary *C. purpurascens* they are considerably shorter.¹ The Pond Inlet plant thus seems to constitute a well-marked variety, which may most satisfactorily and simply be named after its discoverer, who until his untimely death during the Eastern Arctic Expedition of 1933 worked so tirelessly and successfully towards increasing our knowledge of the flora of these regions:

var. *Maltei* n. var.

Glumis fere glabris et aristis 8-9 mm. longis; capillis apud rachillae rudimentum multo longioribus quam typo, fere assecutis apicem lemmatae. Type in Herb. Ottawa, cotype in Gray Herbarium: *M. O. Malte*, Pond Inlet, Baffin Island, No. 118833, Aug. 15, 1927.

General Distribution. The whole species American, transgressing into eastern Asia.² Northernmost record: north side of Klaegbugt, 77° 40' N. in East Greenland (Sørensen ex Seidenfaden and Sørensen 1937, p. 90, sub nom. *C. arundinacea* var. *purpurascens*).

E. Arctic Distribution. Apparently limited to northern Baffin, and there known from only two localities.

Occurrence. Evidently very rare; an extremely xerophilous species growing on dry and exposed, gravelly or sandy ridges.

3. N. BAFFIN: r. Pond Inlet, Malte 1927 (O,G) var. *Maltei*, Polunin 1936, sterile; Arctic Bay, Malte 1927 (O,G).

¹ Being, according to Hultén (1927, p. 106), "never longer than half the lemma" in Greenland and Kamtchatka, although I have seen specimens from elsewhere in which they were nearly three-quarters the length of the lemma.

² For the peculiarly disrupted North American range of this apparently quiescent "relic-species", see Fernald (1933, p. 213). The records from within our area to some extent bridge the great "gap" between Victoria Island and Greenland, between which it was not previously known in arctic latitudes; they also suggest that it may occur on some of the islands lying to the north and west of northern Baffin.

22. *Calamagrostis canadensis* (Michx.) Nutt¹, Gen. N. Am. Pl. I, p. 46 (1818).

My northern material, although it varies considerably, seems nearly all to belong to

var. *scabra* (Presl) Hitchc. in Am. Jour. Bot. XXI, p. 135 (1934).
(var. *Langsdorffii* of American authors, including Inman (1922, pp. 142-3), although the type of this (*Arundo Langsdorffii* Link) is, according to Hitchcock (l.c.), "not an American species".)

This American material, which has been passing as var. *Langsdorffii*, should, according to the detailed treatment of Stebbins (cf. 1930), have the spikelets 4.5-6 mm. long. However, some of the material from the extreme south of our area has them shorter, thus approaching var. *robusta* Vasey (which occurs in its full development a little farther south still), and one or two specimens (e.g., "O. J. Maltby, Payne River, 60° N. 72° W. in Quebec Sept. 1920") have them only 3.8 mm. long, and so might be referred to var. *typica* (Stebbins 1930, p. 39). However, the various forms occurring within our area all grade imperceptibly into one another, and for the time being seem best treated under one varietal name, the more so as they all belong to one series of a group that is little understood. In south-west Greenland, where the plant is generally kept separate as "*Calamagrostis Langsdorffii* (Link) Trin.," it is extensively used by the natives for making baskets, trays, and other useful objects, which they fashion with considerable skill.

General Distribution. The whole species apparently circumboreal, but not really arctic. Northern limits vague, like the taxonomy, but reaching at least 70° N. in West Greenland (cf. Porsild 1920, p. 37, sub nom. *C. Langsdorffii*).

E. Arctic Distribution. Fairly general in northernmost Quebec and Labrador, with one station on the south coast of Baffin²; thus limited to the eastern half of the extreme south.

Occurrence. Common in the mainland regions of Quebec, but very rare elsewhere. It flowers late or sometimes fails to do so at all, and frequently seems to be eking out a rather precarious existence, although it may be the chief herb in the *Salix* scrub developed in favoured situations. It grows still better on some warm, sunny slopes that are fairly damp but nevertheless well drained, and here or sometimes on more exposed hillocks may form a luxuriant sward 40 to 60, or even 80, cm. high. Such patches may be small or many metres in diameter, but in either case, with their light-coloured axes and soft foliage swaying in the breeze, they stand out conspicuously in a country whose surrounding vegetation is relatively meagre and dwarfed.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.

7. N. LABRADOR: r. Burwell, Polunin 1936.

8. N. QUEBEC: c. Diana Bay, Knapp 1936; Payne Bay, Ney and Courtright 1936; Payne River 60° N. 72° W., Maltby 1920 (O); Wakeham Bay, Malte 1927 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G), Polunin 1936; Cape Smith, Malte 1928 (O,G), Polunin 1936.

¹ Not to be ascribed to P. de Beauvois—See Inman (1922, p. 142).

² Taylor's report (1863, p. 332) from Cape Searle almost certainly belongs to another species (See below), mine from Lake Harbour being the first authenticated (*vide* Fernald) record from the Arctic Archipelago.

23. *Calamagrostis neglecta* (Ehrh.) Gaertn. *et al.*, Fl. d. Wetterau I, p. 94 (1799).

C. confinis (Willd.) Nutt.

All the material from within our area, having the culms less than 40 cm. high and the panicle purplish brown and generally less than 5 cm. long, is referable to

var. *borealis* (Laestad.) Kearney in U. S. Dept. Agric., Div. Agrost., Bull. No. 11, p. 35 (1898).

It is true that the characters separating this variety from the typical form are, as Stebbins (1930, p. 55) remarks, "very unreliable". But still, having seen exactly similar reduced phases with dark panicles in far northern Spitsbergen, I agree that they show tendencies sufficiently well marked to warrant their separation as a variety, even if in the south they do grade imperceptibly into the typical form. Thus, already towards the southern extreme of our area there occur phases with long panicles and other characters transitional to the typical form, to which indeed all material from no farther away than Churchill seems better referred, although here again the panicle varies greatly in length and looseness.

General Distribution. The whole species circumpolar, including fairly high-arctic regions. Northernmost record Adventbukta, 78°15' N. in Spitsbergen (e.g., Polunin 1933, field notes), a latitude which indeed does not appear to be reached by any other member of this great boreal genus.

E. Arctic Distribution. Widespread in all the mainland regions of the extreme south, with scattered stations in the Arctic Archipelago northwards to Devon Island.

Occurrence. Generally rather rare, except in favourable moist meadows on the mainland of Quebec and Labrador, where it may be locally abundant or even codominant. Probably often overlooked. All var. *borealis*:

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1934.
4. C. BAFFIN: o. ?"Cape Searle" (Taylor 1863, p. 332, sub nom. *C. canadensis*). Cumberland Gulf, Taylor 1860 and 61 (K) as "*Agrostis rupestris*" and "*Dupontia Fisheri*."
7. N. LABRADOR: l. Burwell, Malte 1927 (O,G), Polunin 1931, 4, and 6.
8. N. QUEBEC: l. Wakeham Bay, Polunin 1936; Wolstenholme, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, Kirchoffer River, Mathiassen 1922 (C) as "*C. confinis*".
10. W. COAST HUDSON BAY: r? Chesterfield, Polunin 1936.

Calamagrostis lapponica (Wahlenb.) Hartm. and *C. cinnoides* (Muehl.) Scribn.

These species are cited from the east coast of Baffin by Simmons (1913, p. 45) and by Gelert (in Ostenfeld 1902, p. 104), respectively, on the basis of Taylor's report (1863, p. 332) of "*C. canadensis*". But even if I have been unable to find these or any other specimens labelled "*C. canadensis*" by Taylor, which would give a clue as to just what he had in mind, I have practically no hesitation in transferring the record to

C. neglecta, which Simmons himself hinted it might be, and which has since proved to grow in the vicinity. *C. cinnoides* belongs only to the United States and to the extreme south of Canada, and true *C. lapponica* probably does not occur in America at all.

24. *Deschampsia brevifolia* R. Br. in Suppl. App. Parry's 1st Voyage, p. ccxc (mispaged cxc) (1824).

D. arctica (Spreng.) Merrill

Aira arctica Spreng.

Aira caespitosa (L.) P. de Beauv. var. *arctica* (Spreng.) Simmons¹

Poa evagens Simmons

As has recently been pointed out by Fernald (1934, p. 90), the name to be used for this plant is *D. brevifolia* after all, as the objections of other authors that this was a later homonym are to be upheld only if the plant in question is treated as an *Aira*. My specimens compare very well with most of the type material in the British Museum, as well as with a plant in the Gray Herbarium collected during Parry's second voyage and erroneously marked "*Dupontia Fisheri* (new genus)"; however, it can be seen from the original Melville Island collections that the colour and size of the glumes are very variable characters in *D. brevifolia*. This, most notably in its short and contracted, blunt-topped panicle and rigid, tapering axes, seems quite distinct from the *D. caespitosa*² series to which *D. pumila* (also a reduced arctic type, but with a wide lax panicle and very small and narrow leaves) belongs, at least in our area. And indeed, if we combined as varieties of the same species all forms that show intergradation (probably most often the result of hybridization and subsequent back-crossing) anywhere within their range, we should have to make many revolutionary alterations in nomenclature.

It will be noticed above that I fully agree with Ostenfeld (1923, p. 168) in placing Simmons' *Poa evagens* as a synonym of the present species, as the sheet of the type number in Kew Herbarium has the lemmas distinctly awned and unmistakably belongs to *D. brevifolia*.

General Distribution. Doubtful as yet, but chiefly rather high-arctic and perhaps confined to North America. I have seen typical specimens only from the Arctic Archipelago and Greenland. Ostenfeld (1923, p. 169) mentions it from 82°28' N. on the north coast of Greenland (coll. Wulff), but the specimens from farthest north that I have seen are: (1) in the Gray Herbarium labelled in the handwriting of Sereno Watson "*Poa arctica* R. Br. Grinnell Land, Lt. A. W. Greely, Lady Franklin Bay Expedn."; and (2) in Gray, Kew, and British Museum Herbaria, collected by Hart in 1875 at Discovery Harbour, 81°43' N. in Ellesmere.

E. Arctic Distribution. Perhaps almost general in the northern half, but farther south apparently rare and limited to calcareous areas.

¹ The material in the Gray and Kew Herbaria collected by Simmons in Goose Fiord, Ellesmere, and labelled by him "No. 3577, 22/8/1901 *Aira caespitosa* L. var. *arctica* (Trin.) Simm." is coarse, with a long, loose panicle and long, acute glumes. It is so different from *D. brevifolia* that someone has written "*D. alpina*" on one of the sheets; but actually it seems to belong to *D. caespitosa*, with which I have taken the liberty of citing it below. Most, however, of the specimens seen by Simmons do indeed belong to *D. brevifolia*, this No. 3577 being doubtless one of the "intermediate forms" of which he speaks (1906, p. 173).

² Even if Linnaeus' original *Aira* of this ilk was published as "*caespitosa*", and this is moreover perfectly correct Latin, it seems best to conform to popular usage and spell it *caespitosa*.

Occurrence. Fairly frequent in the north on open gravelly or muddy areas, showing a marked preference for those that are highly calcareous and lastingly damp in summer, and hence characteristic of solifluction slopes and polygon "rutmarks" (cf. "*Aira caespitosa*" in northern Siberia—Kjellman 1882, p. 274).

1. ELLESMERE: f. *Lady Franklin Bay*, Greely (G) as "*Poa arctica*"; Discovery Harbour, Hart 1875 (G,K¹,B). *South Coast*, several localities (cf. Simmons 1906, p. 174), e.g., Fram Fiord, Simmons 1899 (K,C) incl. 4267 as "*Poa evagens*" (type number), Goose Fiord, Simmons 1901 (N,C) 3438 3485. "*West Coast*, Lands End, between Eidsfjord and Baumann Fiord, and Coal Bay" (Simmons 1906, p. 175).
2. DEVON, ETC., ISLANDS: o. "North Kent Island" (Simmons 1909b, p. 19). "*Devon Island*, Cape Vera" (Simmons 1913, p. 46). *Somerset Island*, Parry 1825 (K,B); Port Leopold, Malte 1927 (O,G) 118853 118854 as "*Deschampsia caespitosa* var. *arctica*."
3. N. BAFFIN: l. Arctic Bay, Polunin 1936; Red Valley, Freuchen 1922 (C); Port Bowen, Parry 1825 (K,B,L).
6. MELVILLE PENINSULA: l? (Edwards ex Hooker 1825, p. 409); Igloolik, Parry (B); Parry ? no loc. (K), Ross ? no loc. 1822-3 (L).
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, South Bay, Manning 1934, Polunin 1936.

25. ***Deschampsia alpina* (L.) R. and S., Syst. Veg. II, p. 686 (1817).**

Aira alpina L.

The Labrador and Resolution Island material of this plant, which does not appear to occur farther west in America, seems identical with that from southern Greenland, and, except for its rather larger and narrower glumes, with specimens from northern Europe, including Spitsbergen. The habitat is, however, much less muddy and open than in Spitsbergen (where the vegetation is rarely closed); moreover, there is in our area generally no awn to be seen. The usually viviparous *D. alpina* is now by most authors maintained as a species separate from the non-viviparous *D. caespitosa* of the same general series, which in our present state of ignorance as to the true nature of vivipary is probably for the best (cf. Scholander 1934, pp. 65 *et seq.*).

General Distribution. Chiefly European, reaching its farthest north station at Wargentindalen, 80°3' N. in North-East Land, Spitsbergen Archipelago (Scholander 1934, p. 65). In Greenland it is found only much farther south, and on the mainland of America only in northern Labrador; hence, it would appear to be a particularly good example of a species that is widespread and long-established in Europe, but has only just reached the nearest parts of continental North America via Greenland.

E. Arctic Distribution. Known only from Resolution Island and northern Labrador in the southeast.

¹ Marked in the hand of Hart "no. 58 to Theod. Fries. I suppose to be *Deschampsia caespitosa* var. *brevifolia*".

Occurrence. Although not previously recorded¹ from our area, this species is frequent enough very locally, at least in the vicinity of Port Burwell. Here it grows luxuriantly, often to a height of 50 cm., with panicles nearly 20 cm. wide. It inhabits damp, grassy slopes and marshy areas around sheltered pools, being especially fond of depressions that in early summer are filled with snow-water but later dry out almost entirely. The panicles in spring are liable to be so heavy with large living plantlets that they arch over and become fixed to the ground as the plantlets take root.

5. S. BAFFIN: r. *Resolution Island*, Acadia Harbour, Potter 1937 No. 8338.
7. N. LABRADOR: f. Burwell, Malte 1927 (O,G) 118855 118856 as "*D. caespitosa* f. *vivipara*", Polunin 1931, 4, and 6; Lady Job Harbour, Potter, 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937.

26. *Deschampsia pumila* (Ledeb.) Ostenfeld in Medd. om Grønl. LXIV, p. 169 (1923).

Whether this plant is indeed to be upheld as a distinct species I am not at all sure, although its distribution within the range of its nearest relatives suggests that it should be. In any case I am unable to agree with Gelting (1934, p. 188) who puts it as a variety of *D. brevifolia* (sub nom. *D. arctica*), as it seems to me clearly to belong to the great *D. caespitosa* series. However, it differs very obviously from *D. caespitosa* and its "Western" segregates *D. bottnica*, *D. beringensis*, and *D. mackenzieana* in its shorter and blunter glumes and extremely diminutive form, the soft and narrow leaves forming extensive, almost moss-like mats, so that altogether it is very well marked in the Arctic (cf. Simmons 1906, p. 175, sub nom. *Aira flexuosa*). In the south it grades imperceptibly into forms that seem better referred to *D. caespitosa* var. *littoralis*. This is probably the result of hybridization; conversely in the Far North fructification is so deficient that ripe seed of any sort, whether of pure or hybrid origin, can rarely be produced.

General Distribution. Apparently only North American (including Greenland), and almost exclusively arctic, except that if we use the present name it must also be cited from Kamtchatka, whence came the type of Ledebour's original *D. brevifolia* γ *pumila* (See Hultén 1927, p. 128).

E. Arctic Distribution. Widespread and possibly almost general or even complete, but so far only collected a few times.

Occurrence. Never abundant and generally rather rare, although doubtless often overlooked. One of the most beautiful of the numerous small arctic grasses, growing chiefly on damp mud or gravel by the sides of pools or slightly brackish lagoons, where it forms soft green mats from which arise occasional rather thick culms. Flowering only rather late, even the appearance of the inflorescences being often delayed until well on in the summer.

1. ELLESMERE: r. Fram Harbour, Simmons 1899 (C) 1412 as "*Aira flexuosa*".
2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1934.
4. C. BAFFIN: r. Clyde, Polunin 1934 and 6.

¹ The report from Akpatok Island (Polunin 1934, p. 203) is entirely erroneous, I find on examining the material myself, as the plants all belong to the non-viviparous *D. caespitosa* series (q.v.). Cf. Polunin (1939, p. 38).

5. S. BAFFIN: o. Lake Harbour, Malte 1927 (O,G) 118857 as "*D. caespitosa*", Polunin 1936; Cape Dorset, Polunin 1934 and 6.
 8. N. QUEBEC: l. Wolstenholme, Malte 1928 (O,G), Polunin 1936.
 10. W. COAST HUDSON BAY: l? Chesterfield, Malte 1928 (O,G), Polunin 1936.

27. ***Deschampsia flexuosa*** (L.) Trin. in Bull. Sc. Acad. Petrop. I, p. 66 (1836).

My material of this species, like most that I have seen in Greenland or the adjacent parts of Labrador, has spikelets 5-5.5 mm. long, and so is to be referred to

var. ***montana*** (L.) Gremli, Excursionsflora für die Schweiz, ed. 4, p. 434 (1881)¹.

However, this seems to be rather doubtfully segregable (cf. Devold and Scholander 1933, p. 137). The species is new to our area, Simmons' report of it from Ellesmere (1906, p. 175), as he himself later admitted (1913, p. 46), being based on specimens of *D. pumila*.

General Distribution. Possibly circumboreal? At least very widespread in Eurasia and eastern North America, and also in the Southern Hemisphere. Not truly arctic, although reaching 66°58' N. in West Greenland (cf. Porsild 1920, who implies (p. 37) that the record from 69°15' N. may be erroneous). It is abundant in the relatively temperate extreme north of Scandinavia, where it probably has its northernmost limit around 71° N. (e.g., Polunin 1930, field notes).

E. Arctic Distribution. Known only from Port Burwell in the extreme southeast, and probably limited to this northern Labrador section.

Occurrence. Must be counted as one of our very rarest species, only one collection having been made within the Eastern Arctic area. However, these plants, although only about 20 cm. high, were growing well enough, being abundant very locally in a sheltered, grassy plain on sandy, well-drained soil. All var. *montana*:

7. N. LABRADOR: r. Burwell, Polunin 1934.

28. ***Deschampsia caespitosa***² (L.) P. de Beauv., Ess. Agrost., p. 160 (1812).

Material from within our area, although it appears all to belong to this great polymorphic circumpolar series rather than to any of the recently proposed segregates such as *D. beringensis* Hultén or *D. mackenzieana* Raup, nevertheless varies considerably. Particularly does it vary in the length of the spikelets. These are most often about 5 mm. long, but much of the material from around the shores of Hudson and Ungava Bays has them much longer, the glumes being so exceptionally long and narrow that I am still not sure that these plants should not be placed in a separate category. However, they all fall within the limits of one variety as outlined by Fernald (1926, p. 153); to this for the time being they had best be referred:

var. ***littoralis*** (Reut.) Richter, Pl. Eur. I, p. 56 (1890).

¹ The usual citation (Parl., Fl. It. I, p. 241 (1848)) is erroneous, as the combination is not made in that place. No earlier edition of Gremli's work has been available to me.

² See footnote on p. 54.

In this admittedly aggregate set I am including, at all events provisionally: (1) Simmons' No. 3577 from Goose Fiord, Ellesmere, to which reference has already been made—cf. footnote 1 on p. 54; (2) my No. 891 from Port Burwell, which I had long thought to be a non-viviparous specimen of *D. alpina*, but which Dr. Linder now informs me is deformed by a systemic fungous infection; and (3) variously named specimens of Taylor from Cumberland Gulf, which are small and soft-leaved and, according to Messrs. Summerhayes and Hubbard of the Kew Herbarium, more like the Novaya Zemlya and Spitsbergen f. *borealis* Trautv. (*Deschampsia borealis* (Trautv.) Post) than var. *littoralis* s. str. of the Alps. However, these authorities agree that until further study can be given to this difficult group I am fully justified in following the policy outlined above.

General Distribution. The whole species circumpolar, covering a great range latitudinally, and in places going far north. Northernmost record Adventbukta, 78°15' N. in Spitsbergen (e.g., Polunin 1933, field notes).

E. Arctic Distribution. Fairly general in the extreme south (possibly much overlooked and almost complete), with scattered stations northwards to the Arctic Circle, and a further isolated one on the south coast of Ellesmere.

Occurrence. Occasional on damp sandy or muddy areas near the shore and around lakes; never common except very locally, and never noted as being of any real importance as a component of the vegetation. Grows generally to about 25 cm., but in the south may be double this height. All var. *littoralis* agg.:

1. ELLESMERE: r. Goose Fiord, Simmons 1901 (G,K) 3577 as "*Aira caespitosa* var. *arctica*".
4. C. BAFFIN: r. *Cumberland Gulf*, Taylor 1860 (K) as "*Hierochloe pauciflora*," "*Poa laxa*," "*Dupontia*," etc.; Koukdjuak River, Soper 1925 (O).
5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 No. 8320 *pars* with *Poa arctica*.
7. N. LABRADOR: r? Burwell, Polunin 1934.
8. N. QUEBEC: o. Payne Bay, Ney and Courtright 1936; Sugluk, Polunin 1936; Cape Smith, Malte 1928 (O,G), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: l. Akpatok Island, Polunin 1931 (B, 25 numbers all as "*D. alpina*").
10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936.

29. **Vahlodea atropurpurea** (Wahlenb.) Fries in Bot. Not., p. 178 (1842).
Aira atropurpurea Wahlenb.
Deschampsia atropurpurea (Wahlenb.) Scheele

It will be noticed that I prefer to follow Hultén (1927, p. 111) and some other modern writers in keeping this separate from the genus *Deschampsia*, as the entity is to my mind more definite, and the generic lines more strong, than is the case with several of the supposed monotypic grasses that are usually upheld as generically distinct in the north.

This beautiful grass was first described by Wahlenberg from northern Scandinavia, and my present material seems inseparable from examples coming therefrom, which likewise have the leaves not obviously hairy under a hand-lens although the branches of the panicle are noticeably so above.

General Distribution. According to Hultén (1927, p. 113) "South and North American, transgressing into Western Europe and Eastern Asia." Northernmost limit probably around 71° N. in the extreme north of Scandinavia (e.g., Polunin 1930, field notes). Said to reach a similar latitude in Alaska ("from Point Barrow") and to exceed it on "North Somerset" (now called Somerset Island). But of this last record (cf. Simmons 1913, p. 46), having been unable to find the specimen reputed to be in the British Museum, I have grave suspicions—especially as the species was omitted by Hooker from his appendix to Parry's Third Voyage, and as it is not known nearly so far north in Greenland or elsewhere in our area.

E. Arctic Distribution. So far known positively only from Wolstenholme, on the mainland of Quebec; but even if the report from Somerset Island is to be queried, its occurrence to the south at Port Harrison and again on the Atlantic coast of Labrador suggests that it may well be more generally distributed in the mainland regions of the extreme south.

Occurrence. In its one authenticated locality it was growing fairly plentifully in sheltered situations having a damp, humous soil.

(DEVON, ETC., ISLANDS: ? "*Somerset Island*" (Parry ex Simmons 1913, p. 46).)
8. N. QUEBEC: 1. Wolstenholme, Polunin 1936.

30. *Trisetum spicatum* (L.) Richt., Pl. Eur. I, p. 59 (1890).
T. subspicatum (L.) P. de Beauv.

Under this name is gathered together from many parts of both hemispheres a considerable complex of forms, which, however, show frequent intergradation. Several of them occur within our area; of these the five most striking, or otherwise worthy of mention, are the following:

(1) The alpine plant of Europe that formed the subject of Linnaeus' original *Aira spicata* has, according to Fernald (1916b, p. 196) "the inflorescence cylindric or obovoid, violet, bronze or brownish, very dense and spike-like, 1.5-3 cm. long." Specimens answering to this description are rare in our area, but occur on Southampton Island (cf. Raup 1936, p. 19) and Baffin (Lake Harbour, Polunin 1934, No. 402).

(2) The vast majority of individuals in the centre and north of our area, and it seems to me also in the extreme north of Europe, have the inflorescence more or less interrupted, and so belong to or at least approach the rather doubtfully segregable

var. *Maidenii* (Gandoger) Fernald in Rhodora XVIII, p. 196 (1916).

(3) The species in our area, as elsewhere, varies greatly in hairiness, sometimes approaching var. *pilosiglume* Fernald, which is fully attained by some specimens occurring at Port Harrison not far to the south.

(4) Much of the material from Hudson Bay, particularly in the south and west, is tall and slender, having "silvery green, finally whitish brown, much interrupted panicles 2.5-11 cm. long" (Fernald 1916b, p. 197), and so belonging to

var. *molle* (Michx.) Beal¹, Grasses of N. Am. II, p. 377 (1896).

But this again intergrades with the other varieties—particularly with luxuriant greenish phases of var. *Maidenii*.

(5) There occurs in places in the south a form with the inflorescence unusually long, and so slender that each spikelet barely overlaps the next above. This, however, seems merely to be the effect of keen competition in a thickly swarded association of tall grasses, and, as it shows all stages of gradation to var. *Maidenii*, and through this to the typical form, is not considered deserving of a trivial name in a group that is already overburdened with them.

General Distribution. The species circumpolar; all over the Arctic and indeed almost cosmopolitan. Northernmost record I. P. Koch Fiord, 82° 48' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 232).

E. Arctic Distribution. Probably complete on ice-free land, but possibly absent from some parts of Ellesmere.

Occurrence. Frequent almost everywhere, in habitats ranging from herb-mats to open *fjaeldmark*², and from dry sandy ridges to fairly damp depressions. However, it is rarely at all abundant, and hence is not one of the more important plants vegetationally. It varies greatly in height, from less than 10 to more than 40 cm., and also in the habit, which in the south is generally upright but in the Far North or near the sea may be decumbent. It seems able to set seed even when flowering later than other species, which is very often the case, as its most characteristic habitat of all is the sloping side of a gravelly or sandy late-snow area, where it is well sheltered by being covered with snow in winter, but is left dry in the summer when this melts and the water drains away. In the Far North it is largely limited to such areas, being in Spitsbergen one of the best indicators of "late snow."

1. ELLESMERE: f. *Lady Franklin Bay* (Greely 1888, II, p. 15, sub nom. *T. subspicatum* var. *molle*; Discovery Harbour, Hart 1875 (K,B); "Bellet Island and Mount Cartmel" (Hart 1880, p. 304). *South Coast*, several stations (cf. Simmons 1906, p. 172), e.g., Fram Fiord, Simmons 1899 (N,C), Craig Harbour, Polunin 1936 var. *Maidenii*, Harbour Fiord, Simmons 1900 (K).
2. DEVON, ETC., ISLANDS: f? *Devon Island*, Dundas Harbour, Malte 1927 (O,G) 118474 var. *Maidenii*, Polunin 1934 and 6, var. *Maidenii*. "*Somerset Island*" (Ross ex Hooker 1826, p. 129).
3. N. BAFFIN: o. *Bylot Island*, Koroqdjuaq, Mathiassen 1923 (C); "Ponds Bay" (Walker ex Hooker 1861, p. 85); Arctic Bay, Malte 1927 (O,G) 118479 var. *Maidenii*, Polunin 1936 apprg. var. *Maidenii*.

¹ Dr. Harold St. John, who makes this combination anew (1929, p. 40), maintains that the usually cited effort of Piper (1906, p. 125) is not made legally, as it is merely a trinomial without indication of the rank or subdivision of the species. However, the difficulty is obviated by the existence of a still earlier publication by Beal, who must accordingly be cited (as I have done above) as the true author of the combination.

² Stony desert of rock debris of all sizes, including patches of finely comminuted soil.

4. C. BAFFIN: f. Clyde, Knapp 1934; "Kivitung" (Boas ex Ambronn 1890, p. 98). *Cumberland Gulf*, Kingnait, Taylor 1860 (O,K,B) var. *Maidenii*; Pangnirtung, Soper 1923 (O,C) var. *Maidenii*, Malte 1927 (O,G) 118477 118478 var. *Maidenii*, Polunin 1934 and 6 var. *Maidenii*; Blacklead Island, Soper 1924 (O,N) var. *Maidenii*.
5. S. BAFFIN: c. "Cape Haven" (Schuchert and White ex Holm 1900, p. 67). *Frobisher Bay*, Sewall 1927 (G) var. *Maidenii*; Point Brewster, Potter 1937 var. *Maidenii*; York Harbour, Potter 1937 var. *Maidenii*. *Resolution Island*, Acadia Harbour, Potter 1937 var. *Maidenii*; Lake Harbour, Malte 1927, 8, and 33 (O,G,N) var. *Maidenii*, Johansen 1927 (C), Soper 1931 (O) var. *Maidenii*, Polunin 1934 and 6 typical form and var. *Maidenii*; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 418); Amadjuak Bay, Soper 1926 (O) var. *Maidenii*; Cape Dorset, Malte 1928 (O,G) var. *Maidenii*, Polunin 1934 and 6 var. *Maidenii*.
6. MELVILLE PENINSULA: f. Igloolik, Edwards (B), Parry (B); Duckett Cove, Parry 1821 (B,C). *Vansittart Island*, Bangsted 1923 (C); Danish Island, Freuchen 1922 (O,C), Birket-Smith 1922 (C).
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 34700 apprg. var. *Maidenii*; Burwell, Hantzsch 1906 (D*), Johansen 1927 (C), Malte 1927 and 8 var. *Maidenii*, Polunin 1931, 4, and 6 var. *Maidenii*; Lady Job Harbour, Potter 1937 var. *Maidenii*; Bowdoin Harbour, Potter and Brierly 1934 (G) var. *Maidenii*, Potter 1937 var. *Maidenii*.
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936 var. *Maidenii*, Knapp 1936 var. *Maidenii*; Payne Bay, Ney and Courtright 1936 var. *Maidenii*; Stupart Bay, Payne 1886 (T) var. *Maidenii*; Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,G,C) var. *Maidenii*, Polunin 1936 var. *Maidenii*; Wolstenholme, Malte 1928 (O,G) var. *Maidenii*, Polunin 1934 and 6 var. *Maidenii*; Digges Island, Bell 1884 (O) 34699 var. *Maidenii*; Cape Smith, Malte 1928 (O,G) var. *Maidenii*, Polunin 1936 var. *molle* and var. *Maidenii*.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B) var. *Maidenii*; Salisbury Island, Buchan 1938 var. *Maidenii*. *Southampton Island*, South Bay, Sutton 1930 (G) typical form, Polunin 1934 var. *Maidenii*, Manning 1934 var. *Maidenii*; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Wager Inlet, Macoun 1910 (O) 79136 var. *Maidenii*; Chesterfield, Malte 1928 (O,G) var. *molle*, Polunin 1936 var. *molle* (Gardner 1937, p. 31); Cape Eskimo, Macoun 1910 (O,N) 79138 var. *Maidenii*.

31. *Catabrosa algida* (Soland.) Fries, Nov. Fl. Suec. Mant. III, p. 174 (1842).

Phippsia algida R. Br.

Simmons (1906, p. 171) writes "As this plant, especially through *C. concinna*, Th. Fr., stands in near affinity to the species of the genus *Catabrosa*, there is hardly any cause for taking up the genus *Phippsia* again." Even before reading this I had come to the same conclusion, chiefly from having observed *C. algida* running into (hybridizing with ?) the more typically Catabrosian *C. concinna* in Spitsbergen. Moreover, this latter, through its subspecies *vaccillans* Th. Fr., also seems to run into some forms of *Puccinellia* (cf. Scholander 1934, pp. 95 *et seq.*), affording yet another example of the poor definition of some grass genera in the Arctic, and suggesting that one or two of the smaller ones might with advantage be combined.

Catabrosa algida varies considerably within our area, most notably in size and luxuriance. In its less favourable habitats it is liable to be one of the most diminutive of all arctic vascular plants, the leaves and culms

being often a bare 1 cm. in length; but in favourable places, especially in manured areas, it is incomparably more luxuriant (cf. Scholander 1934, p. 79, and Summerhayes and Elton 1928, Pl. XXIII), many growing 20 or more cm. high, even in the Far North. Many of these tallest and most upright individuals of rich habitats exhibit also the only variation of any taxonomic significance that I have been able to find, having "paleae densius pilosae." They seem best referred to

f. *vestita* (Holmberg) n. comb.

(*Phippsia algida* forma *vestita* Holmberg in Bot. Not., p. 130 (1924).)

This is plentiful in several places in the northern parts of our area and is closely approached by some specimens from the south. In habit it is very reminiscent of *Puccinellia Vahlia*, and, having large persistent glumes and two-flowered spikelets, may possibly be referable to an entity mentioned above, which may be called *Puccinellia vaccillans* (Th. Fr.) Scholander; of this I have seen no authenticated material, but as the specimens that most simulate it in our area show many stages of gradation into *Catabrosa algida*, I do not dare take it up.

General Distribution. Circumpolar; all over the Arctic. Northernmost record Lemming Fiord, 82° 53' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 230).

E. Arctic Distribution. With little doubt complete on ice-free land, although not yet recorded from Melville Peninsula or the west coast of Hudson Bay.

Occurrence. Common almost throughout the area, but unable to withstand competition, and so in the extreme south often confined to the poorer communities obtaining at the higher altitudes, where again it is so diminutive as to be generally overlooked. Grows chiefly on open, damp soil,¹ thus showing a marked preference for mud polygons and the innermost zones of late-snow patches. However, with an increase in the nitrogenous food substances of the habitat it may grow luxuriantly even in the most northerly and exposed localities. It requires only a very short time for its life processes, flowering and fruiting with remarkable rapidity after the snow has left it. Thus it is able to persist even where the surface dries up rapidly, and also in the Far North where the snow melts only towards the end of the summer. Here specimens are frequently caught still in the flowering stage when the hard frosts and new snows of winter come again, and indeed many individuals seem to persist in a more or less quiescent state for years under perennial snow-patches that melt only in exceptionally warm summers.

1. ELLESMERE: c. *Grinnell Land*, Discovery Harbour, Hart 1875 (K,B); "Radmore Harbour" (Hart 1880, p. 304); Dobbin Bay, Hart (K,B); "Walrus (Norman Lockyer) Island" (Hart 1880, p. 304). *Hayes Sound*, several localities (cf. Simmons 1906, p. 171), e.g., Cocked Hat Island, Simmons 1899 (K), Fram Harbour, Simmons 1899 (N,C), Bedford Pim Island, Simmons 1898 (C). *South Coast*, several localities (cf. Simmons 1906, p. 171), e.g., Craig Harbour, Malte 1927 (O,G) incl. 118836 118847 118851 f. *vestita*, Polunin 1934 and 6 incl. f. *vestita*. *West Coast*, "along the Hell Gate to Lands End" (Simmons 1906, p. 171).

¹ Hart (1880, p. 304) speaks of it "growing in mud by the sea-edge on ground which is flooded by spring-tides" but, although it is quite often to be found in such situations, this habitat is more characteristic of small and superficially similar species of *Puccinellia*, which, therefore, it seems more likely Hart was observing.

2. DEVON, ETC., ISLANDS: c. "North Kent Island" (Simmons 1909b, p. 16). *Devon Island*, several localities (cf. Simmons 1913, p. 47), e.g., Dundas Harbour, Malte 1927 (O,G), Polunin 1934 and 6, Beechy Island ? Lyall (S*), Soper 1923 (O,C) incl. 111377 very doubtful specimen, between Beechy Island and Northumberland Inlet, Lyall 1852 (K). ?*Cornwallis Island*, Assistance Bay, Sutherland 1851 (K) as "*Phippsia monandra*" veg. only. *Somerset Island*, Parry (B), (Ross ex Hooker 1826, p. 129); Port Leopold, Malte 1927 (O,G) incl. 118838 f. *vestita*.
3. N. BAFFIN: c. *Bylot Island*, Qaersut, Freuchen 1924 (O,C); Pond Inlet, Walker 1857 (K), Polunin 1934 and 6, Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O,G), Polunin 1936; ? "Port Bowen"¹ (ex Martens 1859, p. 20).
4. C. BAFFIN: c. *West side Davis Strait*, Taylor 1857 (O,K); Clyde, Malte 1927 (O,G), Polunin 1934 and 6. *Cumberland Gulf*, Taylor 1860 (K,B); Pangnirtung, Malte 1927 (O,C), Polunin 1934 and 6.
5. S. BAFFIN: c. *Signuia* near Cape Haven, Schuchert and White 1897 (O). *Frobisher Bay*, Point Brewster, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1933 (O,G,N), Polunin 1934 and 6; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 418); Cape Dorset, Polunin 1934 and 6.
7. N. LABRADOR: c. Cape Chidley, Bell 1884 (O) 29315; Burwell, Malte 1927 and 8 (O,G,C) 118839 118840 120102 121065, Porsild 1930 (O*), Polunin 1931, 4, and 6, incl. apprg. f. *vestita*; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G, p. maj.) 3188.
8. N. QUEBEC: f? Wakeham Bay, Polunin 1936; Wolstenholme, Malte 1928 (O,G), Polunin 1934 and 6.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); "Mansel (Mansfield) Island" (Bell ex Macoun 1888, p. 196; cf. Polunin 1938, p. 7); Coats Island, Porsild 1930 (O*).

32. **Pleuropogon Sabinei**² R. Br. in Suppl. App. Parry's 1st Voyage, p. cclxxxix (mispaged clxxxix) (1824).

Except in vegetative form, all my material compares well with the type specimen in the British Museum. Indeed this species seems to constitute one good circumpolar entity, the formae *aquatica* and *terrestris* of Simmons occurring throughout the range of the species and being mere ecological phases, related to local (and even temporary) conditions of the habitat just as closely as their names imply. The aquatic form may have leaves 50 cm. long and grow in water almost as deep, but in such circumstances it is generally sterile.

General Distribution. Circumpolar; almost all over the arctic regions, coming south at least to 60°20' N. Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 231).

E. Arctic Distribution. Fairly general and perhaps almost complete on ice-free land, but not yet found in central and northern Ellesmere or on the west coast of Hudson Bay.

¹ Probably a mistake. See footnote on p. 64.

² The specific name should, of course, be spelled *Sabinei* and not "*Sabini*"—or, as is often done and was even the case with Robert Brown's original publication, "*Sabinii*"—as the plant was named for Captain (later General) Edward Sabine of Capt. Parry's expedition, whose herbarium was, according to Brown (1824, p. ccxc), "the most extensive formed on the voyage". It should also be pointed out that this genus, even were we to restrict it to the single species *Sabinei*, cannot be upheld as the only one limited to the regions north of the Arctic Circle; it will be seen from the distribution given here that Hooker (1861b, p. 258) was erroneous in this postulation.

Occurrence. Occasional to frequent (but hardly ever abundant except very locally) on wet mud and around the margins of shallow freshwater pools. When growing in the water it looks most attractive, the long tassel-like spikelets dancing in the breeze, or, in a stronger blast, held out like tiers of flags to leeward of the gracefully curved culms that hold them clear of the surface of the water (cf. Polunin 1932, p. 170). *Pleuropogon* does not seem able to withstand competition, but in some open muddy places it forms quite extensive beds.

1. ELLESMERE: r. *South Coast*, Fram Fiord, Simmons 1899 (G,N,K,C) incl. f. *terrestris*; Goose Fiord, Simmons 1901 (K) f. *terrestris*; "Walrus Fiord" (Simmons 1906, p. 170).
2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Polunin 1934 and 6; Powell Creek, Lyall (K). *Somerset Island*, Parry 1825 (K,B), (Ross ex Hooker 1826, p. 129); Fury Beach, Markham 1873 (K); Port Kennedy, Walker 1858 (K).
3. N. BAFFIN: o. Pond Inlet and near, Malte 1927 (O,G), Polunin 1934 and 6; Arctic Bay, Polunin 1936; ?"Port Bowen"¹ (ex Martens 1859, p. 20).
4. C. BAFFIN: f. "Cape Adair and Scotts Bay" (Taylor 1863, p. 333); Clyde, Polunin 1934 and 6; "Cape Searle" (Taylor 1863, p. 333). *Cumberland Gulf*, Taylor 1860 (O,B); Kingnait, Taylor 1860 (K); Koukdjuak River, Soper 1925 (O).
5. S. BAFFIN: o. ?Lake Harbour, Polunin 1936, veg. only; Cape Dorset, Polunin 1934 and 6.
6. MELVILLE PENINSULA: r? Igloolik, Parry (B).
(N. LABRADOR: ? Burwell, Polunin 1936, veg. only.)
8. N. QUEBEC: r. Wolstenholme, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island* (Malte and Ostenfeld, MS.); York Bay, Parry 1821 (B,C); ?South Bay, Sutton 1930 (G), veg. only, cf. Raup (1936, p. 19).

33. *Poa abbreviata* R. Br. in Suppl. App. Parry's 1st Voyage, p. cclxxxvii (mispaged clxxxvii) (1824).

Except for slight variations in vegetative luxuriance and in the colour and length of the glumes, all the material that I have seen of this very distinct species seems constant and impossible to confuse with any other. Certainly in our area its extremely close-tufted habit, hyaline base, and dense inflorescence make it abundantly distinct in the field from any known phase of *P. glauca*—at least now that *P. Hartzii* has been properly defined (by Sørensen 1933, pp. 145 *et seq.*).

Poa abbreviata belongs to that small group of plants that are more or less circumpolar but exclusively rather high-arctic, and at whose origin and history we can make only the wildest guesses.

General Distribution. Probably circumpolar; high-arctic, being known south of the 70th parallel only from Ugli and Igloolik Islands. These are off the coast of Melville Peninsula, and not in Hudson Strait as is stated by Gelert (in Ostenfeld 1902, p. 124); nor is the species known to occur in Labrador (cf. Simmons 1913, p. 50). Northernmost record Frederick E. Hyde Fiord, 83°15' N. in Peary Land, north coast of Greenland (Colonel I. P. Koch ex Ostenfeld and Lundager 1910, p. 15).

¹ This record is almost certainly wrong, the source being Hooker's appendix to Parry's account (cf. 1826) of his third voyage, which only gives "North Somerset" (Somerset Island) for *Pleuropogon*. Indeed, Martens seems to have had the impression that all the plants of Parry's third expedition were collected at Port Bowen, and that this was on Somerset Island, so I shall in future exclude his records from Port Bowen when no other authority exists (cf. Simmons 1913, p. 48).

E. Arctic Distribution. Probably complete on ice-free land in the Far North, but only occasional south of Lancaster Sound and apparently absent from the south.¹

Occurrence. Abundant in Ellesmere, but becoming rapidly scarcer to the south; grows chiefly on open and dry, gravelly slopes and exposed ridges. Generally only 5-10 cm. high, but occasionally reaching 16 cm. or more when growing with other plants. Often appears somewhat nitrophilous—thus by the side of his Franklin Search Expedition specimen, preserved in the Department of Botany of the University of Toronto (cf. Polunin 1936b, p. 412), Sutherland wrote "in grassy tufts where the dung of foxes, ptarmigan and the owl accumulate and where spiders and other insects abound."

1. ELLESMERE: c. almost everywhere—numerous records from at least thirty localities (O,G,N,K,B,C, etc.).
2. DEVON, ETC., ISLANDS: c. "North Kent Island" (Simmons 1909b, p. 19). *Devon Island*, "Boat Cape (coll. Schei) and Cape Vera" (Simmons 1909b, pp. 6 and 8); Dundas Harbour, Malte 1927 (O,G), Polunin 1934; Powell Creek, Lyall 1852 (K) as "*Poa laxa*"; Beechy Island, Lyall 1854 (K,S*). *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T) as "*P. brevifolia*?" and (K) as "*P. cenisia*." *Somerset Island*, Parry 1825 (K,B); Port Leopold, Malte 1927 (O,G); Port Kennedy, Walker 1858 (K) as "*P. laxa* var. *angustata*."
3. N. BAFFIN: 1. Pond Inlet (Albert Harbour), Malte 1927 (O,G). *Admiralty Inlet*, Arctic Bay, Malte 1927 (O,G), Polunin 1936; Saputit, Mathiassen 1922 (C) 109 as "*Festuca ovina* var. *brachyphylla*"; Port Bowen, Ross 1825 (N,K,B) as "*P. flexuosa* var. *abbreviata*."
6. MELVILLE PENINSULA: r. ?Ross (L); Igloolik, Parry 1822 (G,K,B); Ugli Island, Mathiassen 1922 (C).

34. *Poa Nascopieana*² n. sp.

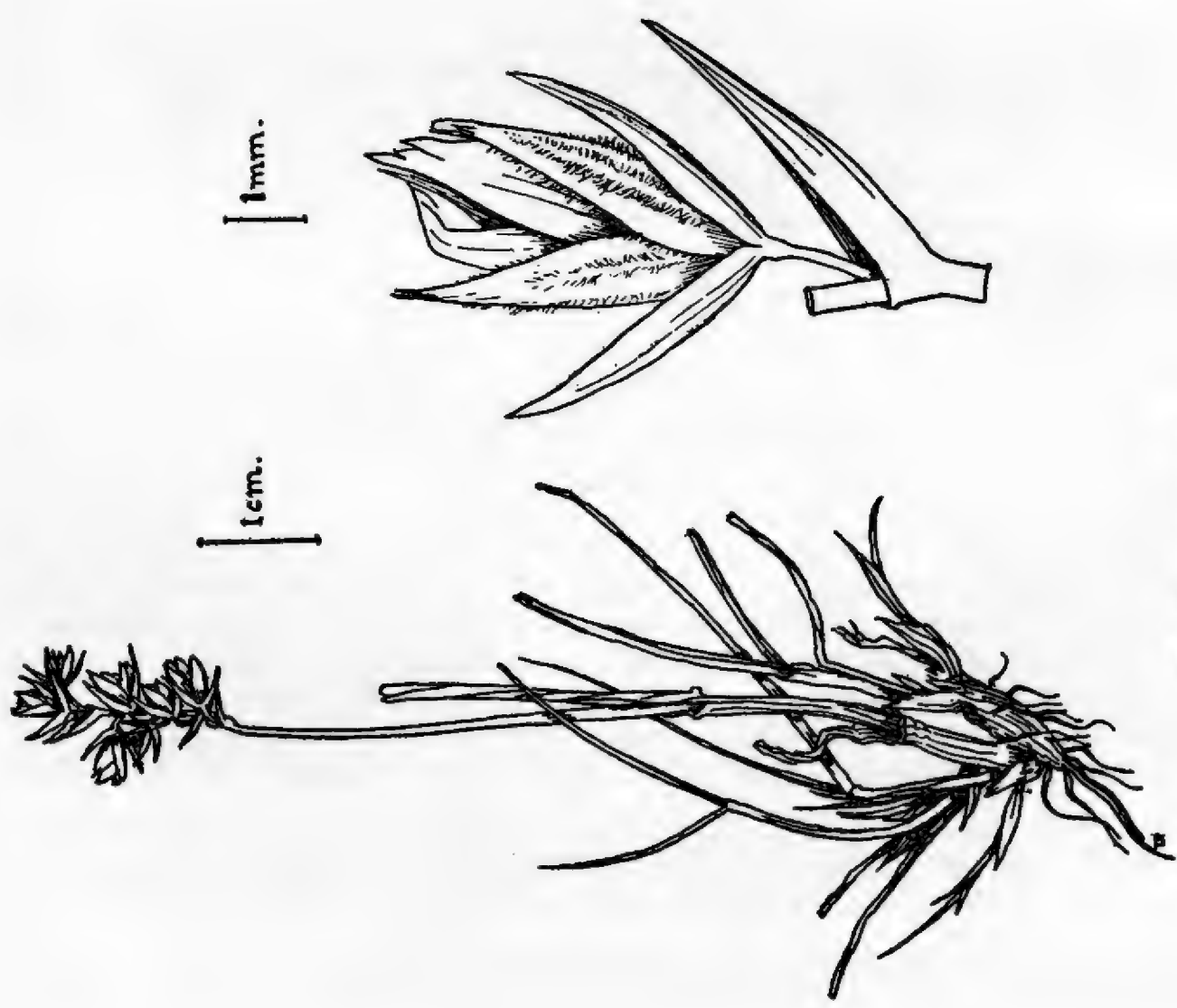
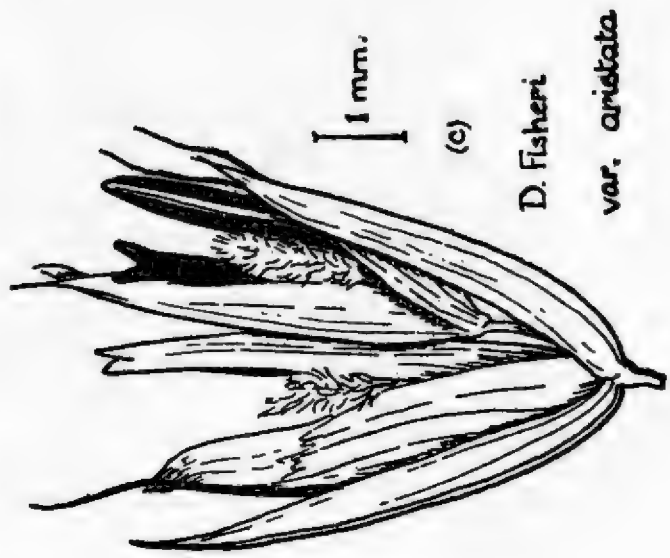
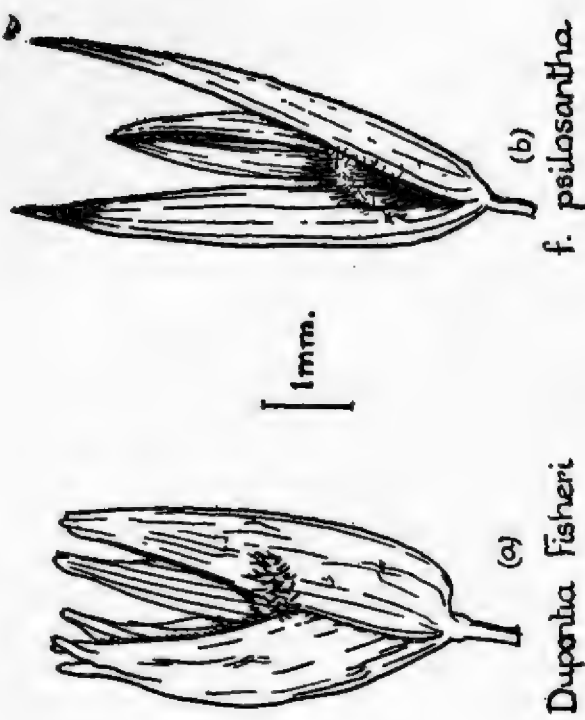
Gramen perenne caespitosum, c. 10 cm. altum; foliis anguste involutis, marginibus scabridis, superficie nitida et glabra, plus minusve manifesto candidioribus nervis; vaginis albidis vel roseis; ligula lata, obtusa, c. 1 mm. longa; stipite erecto et glabro; panicula simplici, subovata, 1-2 cm. longa, 1 cm. lata, ramis brevibus glabris, subtenis anguste-lanceolata bractea 4-5 mm. longa; spiculis ovatis, 5-7 mm. longis, glumis acutis, subaequalibus, 4-5 mm. longis, 3-nervatis saltem ad fundum, glabris sed non supra nervis; rachillis c. 1 mm. longis, separantibus flosculos ut et spicularum flosculi imi excedant distincte glumas; paleis oblongatis-ovatis, non hyalinis nisi ad apicem paulo acutum, 5 mm. longis, duobus nervis disjunctis utrinque inter marginem carinamque; nervis ferentibus permultos breves capillos, sericos et appressos, sed lemmatis natura glabris inter nervas, vel aliquot paulo pilosis ad fundum; palea interiori angustiori, pilosiori et minus distincte 5-nervatis quam exteriori. Type in British Museum: *Nicholas Polunin*. In damp mixed tundra near sea-level, Pangnirtung Fiord, Cumberland Gulf, Baffin Island, No. 549, Sept. 5, 1934. Figures on Plate II.

Distribution, Etc. Known only from a single collection from the type locality at lat. 66°6'N. and long. 65°30' W. in Baffin Island. This collection was made in 1934 and it had been hoped to get more material in 1936

¹ Such southern reports as "Digge's Island, Hudson Strait. R. Bell" (Macoun 1888, p. 222) belong instead to other species—in this instance to *P. arctica* (q.v.).

² Named after the R.M.S. *Nascopie*.

PLATE II



Ra. Nascopecana

when the same region was revisited, but unfortunately the ground was this time under snow and as the exact spot had not been marked no further specimens could be found. *Poa Nascopieana* superficially resembles *P. abbreviata*, which is probably its nearest relative, but from which it is at once distinguished by its much less densely caespitose habit, its larger spikelets and less hairy but distinctly 5-nerved lemmas, and most notably by the presence of the peculiar and very conspicuous bracts subtending the few branches of the inflorescence. This last feature I have elsewhere seen only in some specimens of doubtful affinity in the mountains of Colorado.

4. C. BAFFIN: r. Pangnirtung, Polunin 1934 (B).

35. *Poa laxa* s.l. (Haenke apud Jirasek *et al.*, Beobacht. a. Reisen n.d. Reisengeb., p. 118 (1791)).

Although all the records of "*Poa laxa* Haenke" from the northern islands should with little doubt be referred to other species (cf. Simmons 1913, p. 50), most often to hybrids or forms of *P. glauca* as suggested by Ostenfeld (1923, pp. 171-2), there nevertheless occurs within our area on the mainland of Quebec a form that belongs to this difficult complex. And as it does not quite fit the description of the recently proposed *P. Fernaldiana* Nannfeldt, which the author moreover says (1935, p. 55) is "restricted to Newfoundland, the Gaspé Peninsula, and the higher mountains of New England", I have retained it under the above more inclusive and conservative name. On both sides of Hudson Strait occur transitional forms which seem to connect *Poa laxa* and *P. glauca*, but which I feel are best referred to the latter more widespread and still more polymorphic series. One of these forms, collected at Port Burwell (Nos. 118437 and 118439), greatly worried the late Dr. Malte, who first identified it with one and then with the other species before questioning whether it might not be new. I have thought best to include it under *P. glauca* (q.v.).

General Distribution. ? Circumboreal; in Greenland doubtful except in the extreme southwest (cf. Polunin 1937, field notes), and indeed most arctic records (including all previous ones from within our area) are probably erroneous (cf. Nannfeldt 1935, p. 60). Northern limit unknown owing to confusion with other species; possibly Wolstenholme, 62°35' N. in the Province of Quebec (Polunin 1934, field notes, *vide* Fernald)¹.

E. Arctic Distribution. Apparently limited to the mainland of Quebec in the extreme south, where it is, however, probably fairly general.

Occurrence. Occasional in sheltered and humid places among rocks.

8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 *vide* Fernald; ? Cape Smith, Polunin 1936.

36. *Poa glauca* M. Vahl in Flora Danica fasc. XVII, p. 3, tab. 964 (1790).
P. caesia Sm.

This is a veritable *typus polymorphus*, of which, concerning material from Ellesmere alone, Simmons (1906, p. 162) wrote "I have had a good deal of trouble in coming to a conclusion as to how my material was to be arranged, and only with hesitation I place here two of the forms

¹ It is, however, probably the same plant that reaches Saltdal, lat. 67°5' N. in Norway (cf. Dahl 1934, p. 251).

mentioned below". Hence, with abundant material from almost all over the Eastern Arctic, I had few misgivings about abandoning my early attempts at sorting it all according to the various major tendencies exhibited. To be sure, several described "varieties" were represented in this material; but transitional forms were so abundant and the characters were so unstable that the task seemed futile, and I soon came to agree with Porsild (1920, p. 41) that *Poa glauca* "varies without limits according to the quality of the place". I am even having to "lump" some of the varieties already recorded from within our area, but retain two that seem relatively well marked. The first of these will be dealt with under *P. Hartzii*; the second is a rather feebly growing reduction-phase which is, however, very widespread, occurring in open, clayey or muddy places almost throughout our area. It may perhaps be a mere ecological phase, but of this I cannot be at all sure, so retain it as

var. **tenuior** Simmons, Vasc. Pl. in the Fl. of Ellesmereland, p. 162 (1906).

Besides the almost endless variations in habit, size (from less than 10 to more than 40 cm. even in the Far North), length of the glumes and spikelets, etc. (which have led to the erection of a host of varieties, but which with sufficient material can be shown to grade into one another and, anyhow in our area, to be generally inconsistent in any one group of characters), there are separable certain categories that seem to indicate a grading of *P. glauca* into (hybridization with ?) *P. arctica*, *P. alpina*, *P. laxa*, and *P. pratensis*¹—at least in the senses in which these species are understood in the present treatise. What it all means I cannot say, but as with *Potentilla* (and there can be little doubt that we get hybridization in that case), occasional intermediates occur between the several more obviously delimitable species-complexes, and with sufficient material we can construct, on one or more (often independently varying) characters, an almost continuous series in which we know not where to end any one species and begin the next.

General Distribution. The species circumpolar; all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 231).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Generally common and often locally abundant and of vegetational importance—especially in the north, where it can enter almost any community that is not too damp. It grows chiefly on open, clayey or gravelly plains, whether these be of marine, freshwater, or morainic origin, and, especially around habitations or manured areas, may locally convert the ground into a luxuriant meadow, its dense tussocks growing so close together that the arching culms cover the ground between. It may also largely cover the higher-lying parts of ruined igloos, graves, etc.—even when these are exposed and seem very dry.

¹ A similar situation is implied for other members of the genus by Gelert (in Ostenfeld 1902, p. 125) when he says "*Poa laxa*, *abbreviata*, *glauca*, and *nemoralis* form a natural group, and although the types are very distinct, they are combined with intermediate forms." Thus, almost all our *Poa* species run together in one or another part of the Arctic.

1. ELLESMERE: c. *Grant Land* 82°30', Bartlett 1908 (K,B,C) as "*P. cenisia*"; near Fort Conger, Hansen 1920 (C); Discovery Harbour, Hart 1875 (G,K,B) as "*Glyceria angustata*" and "*P. cenisia*". *Hayes Sound*, several localities (cf. Simmons 1906, p. 163), e.g., Hart 1875 (K,B) as "*P. cenisia*", Bache Peninsula, Malte 1927 (O,G), Fram Harbour, Simmons 1899 (C). *South Coast*, many localities (cf. Simmons 1906, pp. 63-4), e.g., Fram Fiord, Simmons 1899 (C), Harbour Fiord, Simmons 1900 and 02 (G,N,K,C), Goose Fiord, Simmons 1901 (G,B,N,C) incl. var. *tenuior*.
2. DEVON, ETC., ISLANDS: f? *Devon Island*, Dundas Harbour, Malte 1927 (O,G), Polunin 1934 and 6; *Beechy Island*, Lyall 1854 (K).
3. N. BAFFIN: c. *Bylot Island*, Button Point, Wilcox 1928 (O,N); Koroqdjuaq, Mathiassen 1923 (C). *Eclipse Sound*, Pond Inlet, Malte 1927 (O,G), Polunin 1934 and 6 incl. 2461 apprg. *P. arctica*; Qilalukan, Mathiassen 1923 (C). *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O,C); Arctic Bay, Malte 1927 (O,G), Polunin 1936 incl. Nos. 2526 2569 var. *tenuior* and 2547 apprg. *P. arctica*; Cape Bøggild, Freuchen 1922 (C); Cape Hallowell, Freuchen 1922 (C).
4. C. BAFFIN: f? *Cumberland Gulf*, Kingnait, Taylor 1860 (O) 29203 as "*Poa Balfourii*?" and (B) as "*P. cenisia*"; Pangnirtung, Polunin 1934 and 6.
5. S. BAFFIN: c. "*Cape Haven*" (Schuchert and White ex Holm 1900, p. 67). *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1927, 8, and 33 (O,G,N,C) incl. 118431 as "*P. glauca* x *rigens*?", Polunin 1934 and 6 incl. 349 381 var. *tenuior*, and 435 apprg. *P. laxa*; Cape Dorset, Burwash 1925 (O), Soper 1926 (O), Polunin 1934 and 6 incl. 278 318 2356 var. *tenuior*, and 305 apprg. *P. laxa*.
6. MELVILLE PENINSULA: f? Igloolik, Parry (C); Ugli Island, Mathiassen 1922 (C). *Vansittart Island*, Opposite Island, Freuchen 1922 (C); Danish Island, Freuchen 1922 (O,N,C), Birket-Smith 1922 (C).
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K); Burwell, Malte 1927, 8, and 33 (O,G,C) incl. ?¹ 118437 118439—also 118402 as "*P. alpina*," Polunin 1934 and 6; Lady Job Harbour, Potter 1937; Ikordlearsuk Mountain, Abbe 1931 (G).
8. N. QUEBEC: c. *Payne Bay*, Ney and Courtright 1936; Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,C), Polunin 1936 incl. 1410 1467 apprg. *P. pratensis*; Sugluk, Polunin 1936 incl. 1498 *pars* var. *tenuior*, and 1526 apprg. *P. laxa*; Wolstenholme, Malte 1928 (O,G,C) incl. 120958 glumes 3 mm. long, and 120953 glumes 6 mm. long, Polunin 1934 and 6; Cape Smith, Malte 1928 (O,G,C), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B) 700 as "*P. rigens*." *Southampton Island*, York Bay, Parry 1821 (C); South Bay, Malte 1928 (O,G,C), Manning 1934, Polunin 1934 and 6 incl. 110 120 150 161 var. *tenuior*; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Wager Bay, Macoun 1910 (N); Fullerton, Macoun 1910 (O,G,N,C) 79134 as "*P. pratensis* β *alpigena*"; Chesterfield, Malte 1928 (O,G,C), Polunin 1936 incl. 2107 var. *tenuior*, (Gardner 1937, p. 32); Rankin Inlet, Macoun 1910 (O,C).

37. ***Poa Hartzii*** Gandoger, emend. Soerensen in Medd. om Grønl. CI, 3, p. 145 (1933).

Although concerning this species Sørensen (l.c., p. 153) distinctly says "In our Arctic Herbarium I have not found specimens collected outside Greenland," Scholander claims (1934, p. 81) to have seen some examples from Ellesmere "*leg. Simmons 1899 Fram Fiord No. 4243 sub nom. P. glauca* Vahl var. *arenaria* Hartz". Scholander seems to be such

¹ Very doubtful specimens—See also under *Poa laxa*, p. 67.

an excellent observer that, supported as he is by Simmons' (1906, p. 162) own mention of the still "longer and more pointed ligule" of his material, I had from the beginning very little doubt that he must be right, and had decided to take up *P. Hartzii* in our area. Accordingly, it was gratifying to find a duplicate of Simmons' No. 4243 in the herbarium of the New York Botanical Gardens—and, later, other specimens somehow overlooked by Sørensen in the Copenhagen Herbarium. All belong unmistakably to the xeromorphic plant with the long ligule and other features described by Sørensen (l.c.), and which certainly seems to be specifically distinct from *P. glauca*.¹

It now seems to me that another plant collected by Simmons in Ellesmere must be referred to *Poa Hartzii*, viz., No. 3643 "In sinu Goose Fjord Ellesmerelandiae meridionalis in campis argillaceis ad Midday Knoll, 26 VIII 1901." This is a viviparous form that Simmons (1906, p. 163) seems to have had grave doubts about placing with *P. glauca*,² of which no viviparous form had hitherto been described. I have compared the duplicate sheet of it in the Gray Herbarium with a specimen of *Poa Hartzii* from East Greenland, collected and named by Sørensen himself, and Simmons' plant seems to me to have just the densely caespitose habit, long whitish leaf-sheaths, narrow inflorescence, and long pointed ligule of *P. Hartzii*, even if the leaves are broader and the lemmas and other inner parts of the spikelets have been so upset by the vivipary as to look quite different. Hence, I propose, under *P. Hartzii*,

var. *vivipara* n. nom.

(*Poa glauca* Vahl var. *atroviolacea* Lange f. *prolifera* Simmons, Fl. Ellesm., p. 163 (1906); cf. specimens in Kew and British Museum Herbaria.)

Planta *P. Hartzii* similis habitu, foliis, ligula et inflorescentia, sed nonnihil inferior et crassior, foliis latioribus; a forma typica in eo differt praecipue quod vivipara est, glumis longioribus et paleis minus pilosis. Figure on Plate III.

General Distribution. ?The whole species possibly circumpolar. Apparently exclusively arctic. So far known from Greenland between latitudes 61°33' and 77°40' N., Spitsbergen (where it has its northernmost known station in Vestfjorden, c. 79°10' N. in Wijde Bay—cf. Scholander 1934, p. 81), and now Ellesmere, where it is perhaps of fairly general occurrence. The var. *vivipara* is known with certainty only from its type locality in Goose Fiord, southwestern Ellesmere.

E. Arctic Distribution. Known only from Ellesmere, where it is widespread, and doubtfully from North Kent Island.

Occurrence. Apparently rather rare even within its limited area, but perhaps much overlooked. The two collections of Simmons are, in the

¹ Nannfeldt has recently (1935, p. 25) maintained that *P. Hartzii* is very near to *Poa abbreviata*, and that it is always sterile. With the former statement I can agree only if the implication is withdrawn that *P. Hartzii* is not specifically distinct; as to the latter, Dr. Sørensen informs me that he has grown *P. Hartzii* from seed in northeast Greenland, although the species may possibly be apomictic as pollen formation is very deficient.

² Mr. Johannes Lid has had much the same qualms, having queried (1935) the specimen in the Kew Herbarium.

case of the typical form, "from loose sand in the river-valley" (1906, p. 162), and, in that of var. *vivipara*, "from a rather limited area . . . where it grew in fields and slopes of stiff clay" (1906, p. 163).

1. ELLESMERE: o. ? *Grant Land* 82°30' N., Bartlett 1908 (N) as "*Poa cenisia*"—scrap only. *Hayes Sound*, Twin Glacier Valley, Feilden 1876 (K, pars) as "*Hierochloa alpina*"; ? Fram Harbour, Simmons 1899 (N) 1105 as "*Poa glauca*". *South Coast*, Fram Fiord, Simmons 1899 (N,C) 4243 as "*P. glauca* var. *arenaria*"; Goose Fiord, Simmons 1901 (G,K,B,C) 3500 3643 var. *vivipara*.

(DEVON, ETC., ISLANDS: ? "North Kent Island" (Simmons 1909b, p. 20, sub nom. *P. glauca* f. *prolifera*).)

38. *Poa arctica* R. Br. in Suppl. App. Parry's 1st Voyage, p. cclxxxviii (mispagcd clxxxviii) (1824).

Poa cenisia All.¹

Poa rigens of authors, not Hartm.

Opinions as to the correct name to be applied to this species have changed several times; in calling it *P. arctica* I am merely following the latest publication on the subject (cf. Nannfeldt 1934). As Taylor (1863, p. 332) remarks, this is "Perhaps the commonest Arctic grass", and altogether one of the most abundant and ubiquitous plants within our area; it varies considerably from place to place and often from one example to the next—indeed in such a mixed and baffling manner that I have given up most of my early attempts at sorting out the more obvious traits. Among the entities that it does seem possible to separate (on a single good constant character having other minor ones to support it), is a form with glumes up to 6 mm. long. This appears in many places, and is to be contrasted with another form that has the glumes only 3 mm. long and occurs chiefly on the west coast of Hudson Bay. It seemed at first that these phases might be at least varietally separable, but more abundant material obtained in 1936 showed (as in many other cases) the existence of almost all stages of transition to the typical form; so I do not dare give names even to such extremes, especially in a group in which so many species and varieties have already been erected. The same applies to a caespitose phase that is particularly frequent in the Far North.

The situation with *Poa arctica* in our area is complicated not only by this tendency of several characters to vary excessively, often independently of one another, but also by its apparently running into (hybridizing with?) other *Poa* species. Most notable is a considerable bulk of specimens that can be referred neither to *P. arctica* nor to *P. glauca*, but seem to fall somewhere between the limits of the two species; to these the designation of hybrid has already in some cases been given by the late Dr. Malte, who as Dominion Agrostologist spent many years studying the grasses of Canada before becoming Chief Botanist in the National Museum and making his three expeditions into our area. Again, there are many individuals that in one or more characters seem strongly to approach *Poa pratensis* s. l., although I have included them in *P. arctica* whenever they

¹ Concerning the synonymy it is worthy of note that in a letter in the New York Botanical Gardens dated Sept. 29, 1932, and written to Dr. Elmer D. Merrill, the late Prof. A. S. Hitchcock says "in my opinion Colorado specimens, at least in part, of *Poa cenisia* should be referred to *P. arctica*".

accorded with the type or other Melville Island material in having the lemma only 3-nerved and hairy all over towards the base. Even so, there are a number of specimens that might almost equally well be placed in either category, the two species appearing to run together completely in our area, even if they are abundantly distinct farther south—See also under *Poa pratensis*.

Viviparous Poas are fortunately much less common with us than they are in arctic Europe. However, at Dundas Harbour and again at Arctic Bay I found a form that seemed without any doubt to belong to the *Poa arctica* series.¹ As Lindberg's own material of his *Poa stricta* seems to have been a heterogeneous mixture of the viviparous forms of several different species (cf. Simmons 1906, p. 168), and as I agree with almost all the statements of Gelting (1934, pp. 200 *et seq.*) concerning the arctic viviparous Poas—in particular the danger of assuming them to be of hybrid origin—I think it best to refer these plants to

var. vivipara Hook. in Parry, Jour. Third Voyage, p. 129 (1826).

General Distribution. Circumpolar; all over the arctic regions including the northernmost coasts of all, the record being Low Point, 83°6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 231).

E. Arctic Distribution. Surely complete on ice-free land.

Occurrence. Plentiful everywhere, growing in almost all areas that afford for the roots a matrix that is neither excessively dry nor continuously waterlogged in summer. Frequently it is very abundant, becoming an important (although generally secondary) constituent of the vegetation in a variety of plant associations. In disturbed (and especially in manured) areas it is, however, likely to become predominant, forming a close, meadow-like mat around old Eskimo dwellings, bird rookeries, or dead carcasses.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. var. *vivipara* "Harbour and Goose Fiords" (Simmons 1906, p. 168).
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. var. *vivipara* "Cape Vera" (Simmons 1909b, p. 8, sub nom. *P. cenisia* f. *prolifera*), Dundas Harbour, Polunin 1934 and 6, Beechy Island, Lyall 1854 (K,S*) as "*Poa caesia*"; incl. apparent hybrid with *P. pratensis* s.l. (q.v.), Dundas Harbour, Polunin 1934 and 6; incl. Cape Warrender, Parry 1825 (K) as "*Poa laxa*?"
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. var. *vivipara*, Arctic Bay, Polunin 1936; incl. apparent hybrid with *P. pratensis* s.l., Pond Inlet, Polunin 1936; Arctic Bay, Polunin 1936.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Malte 1927 (O,G) 118407, Polunin 1934; incl. Exeter Fiord, Taylor (K) as "*P. flexuosa* var."
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Signuia, Schuchert and White 1897 (O) 29162 as "*P. flexuosa*"; incl. Cairn Lake, Robinson 1922 (G) as "*P. abbreviata*".

¹ Besides the extra records (from Ellesmere, Beechy Island, and Nottingham Island) of this form that are given below, I have seen in the British Museum and the Linnean Society specimens collected by Sir J. C. Ross in 1822-3 (without definite locality, but probably somewhere on Melville Peninsula), and also a sheet in the British Museum collected during Parry's second voyage, probably also on Melville Peninsula. All of this indicates that the viviparous form is of much more general occurrence in eastern North America than my own few observations or the contentions of previous writers suggest.

6. MELVILLE PENINSULA: c. "*Interior*" (Rae 1850, p. 215), ? Ross (L); Igloolik, Parry (K), Edwards (B,S*); Cape North East, Freuchen 1922 (C*); *Vansittart Island*, Mathiassen 1921 (C*), Birket-Smith 1923 (C*); Danish Island, Mathiassen 1921 (C*), Freuchen 1922 (C*); Repulse Bay, Hooper 1821 (L).
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. *Chidley Peninsula*, MacGregor 1905 (K, pars) as "*P. caesia*"; incl. Cape Chidley, Bell 1884 (O) 29145 as "*P. flexuosa*", 29200 as "*P. laxa*"; incl. Burwell, Borden 1904 (O,N) 63094 as "*P. flexuosa*."
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. apparent hybrid with *P. glauca*, Wolstenholme, Polunin 1934; incl. Stupart Bay, Payne 1886 (T) 7 as "*P. laxa*"; incl. King George Sound, Bell 1897 (O) 18797 as "*Glyceria vilfoidea*"; incl. Digges Island, Bell 1885 (O) 29270 as "*P. abbreviata*."
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. var. *vivipara*, Nottingham Island, Mackenzie 1886 (O) 34714 as "*P. flexuosa*."
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Wager Inlet, Macoun 1910 (O,G,N) 79126 as "*P. flexuosa*", Cape Eskimo, Macoun 1910 (O,N) 79127 as "*P. flexuosa*."

39. *Poa pratensis* s. l. (L., Sp. Pl. ed. 1, p. 67 (1753)).

After several attempts at following other systems, I have had to unite under the oldest common name all the very complex series of forms of this affinity that occur within our area.¹ Probably the vast majority are referable rather to var. *alpigena* E. Fries (*Poa alpigena* (E.Fr.) Lindm.), which, however, itself appears to vary within wide limits.

It seems probable that there is a considerable amount of apomixis within the genus *Poa*, especially in this group, and Nannfeldt (1934, p. 19) considers that it "should be parallelized with *Hieracium* subgen. *Pilosella* and *Rosa* sect. *Caninae*, where habitual apomixis, together with normal sexuality, gives rise not to distinct microspecies but to swarms of most puzzling forms connected with each other."

But, quite apart from the extreme difficulty of subdividing any large material of *Poa pratensis* s.l., we have the added complication of its apparent connection with several other species. Most notably it appears to run right into forms of *P. arctica*, as mentioned by many recent authors (e.g., Devold and Scholander 1933, p. 144). Lindman himself seems to have had some difficulty in separating *P. pratensis* from *P. arctica* (cf. Nannfeldt 1934, p. 12, who adds that the nerves of the lemmata afford "a very dangerous character" as their distinctiveness "to a large extent depends upon the age of the spikelets"). Almost all specimens from the northern two-thirds of our area show one or more of the characters of *P. arctica*, so for the present purpose I have followed Gelert (in Ostenfeld 1902, p. 120) in including under *P. pratensis* all of the sufficiently large and coarse plants whose lemmas are evidently 5-nerved and not too hairy all over below. Even so there remain, chiefly from the Far North, quite a large number of specimens that cannot with confidence be put into either species. To some of these Nannfeldt refers, saying (1934, p. 14) that they "may be specifically distinct both from *P. arctica* and from *P. pratensis* sensu lat." But in view of their apparent intermediate nature and the

¹ This was the policy of Simmons (1906, p. 169), Persild (1920, p. 39), and Hultén (1927, p. 133), and seems also to have been that of the late Dr. M. O. Malte, who as Dominion Agrostologist for many years before his appointment to the National Museum was a foremost student of this and other Canadian fodder grasses.

fickleness of the characters concerned (which vary even from flower to flower in the same spikelet), I myself would hesitate to separate any of them even varietally. In much the same manner does *P. pratensis* s.l. appear to run into *P. glauca*, so that we get an almost continuous series within our arctic *Poa* species.¹

Simmons (1906, p. 169) had some qualms about referring certain small viviparous plants from southern Ellesmere to this species, but I have little doubt that he was right, and moreover that some of my own material from the same region (Craig Harbour 1934, Nos. 824, 827, and 856; 1936, No. 2482) should be so referred; also a specimen in the Gray Herbarium collected by Gen. Greely in Grinnell Land.² I, accordingly, take up, as Professor Fernald has recently done in identifying apparently identical specimens from the adjacent parts of northwest Greenland:

f. **prolifera**³ Simmons, Vasc. Pl. in the Fl. of Ellesmereland, p. 169 (1906).

Within our region this appears to be restricted to Ellesmere, where it grows on open, earthy areas, and especially on the sides of ruined igloos (although the Eskimo left these northernmost islands probably several hundred years ago).

General Distribution. Circumpolar; general in arctic as well as temperate regions, but although reaching the northernmost land-masses, it is apparently absent from some of their northern coasts. Most of the farthest north material belongs to one of the viviparous forms, the northernmost record being apparently that of Greely from Lady Franklin Bay, c. 81°43' N. in Ellesmere (specimen in Gray Herbarium²).

E. Arctic Distribution. Although not yet recorded from some considerable areas, it is in one form or another probably almost complete on ice-free land—except perhaps in the north of Ellesmere.

Occurrence. Rather common in the south, getting rarer and less distinct from *P. arctica* as we go farther north. Grows in many different types of habitat, including heaths and herb-mats, but flourishes best in open, gravelly or earthy places, being especially abundant in manured areas and around settlements or ruined igloos. Here it may grow as much as 50 cm. high and, spreading by its vigorous stolons, often forms a luxuriant closed sward, which for a time dominates the area to the exclusion of other colonists.

1. ELLESMERE: o. *Lady Franklin Bay*, Greely (G) f. *prolifera* as "*P. alpina* var. *vivipara*." *Hayes Sound*, Skräling Island, Simmons 1899 (N,K,C); "*Cape Viele*" (Simmons 1906, p. 169). *South Coast*, Craig Harbour, Polunin 1934 and 6 f. *prolifera*, Kearney 1935 (O) f. *prolifera*, Feachem 1937 f. *prolifera*; *Fram Fiord*, Simmons 1899 (C) 1635 f. *prolifera*; *Goose Fiord*, Simmons 1901 (N,K,C) 3480 f. *prolifera*.

¹ cf. footnote on p. 68.

² This is labelled in the handwriting of Sereno Watson "*Lady Franklin Bay Expedn: Poa alpina* L. var. *vivipara*" and is one of the chief foundations for the report of *Poa alpina* from Ellesmere. It now seems safe to exclude this species from the flora of Ellesmere and the other northernmost islands of our area (cf. Simmons 1906, pp. 166-7).

³ Just what relationship this has with *Poa alpigena* (E. Fries) Lindman var. *vivipara* (Malmgr.) Scholander and var. *colpodea* (Th. Fries) Scholander I cannot say, in the absence of authenticated material for comparison. Of the latter variety Scholander (1934, p. 92), who had access to Simmons' abundant *Poa* material from Ellesmere, says that (in Oslo) "we have distinct forms only from Spitsbergen and particularly from the limestone tracts of North-East Land".

- (DEVON, ETC., ISLANDS: ? Apparently absent, at least in full development, but specimens intermediate between this species and *P. arctica*, which I have above referred to the latter, occur at Dundas Harbour (Polunin 1934 and 6) and Beechy Island (Lyll 1854 (K,S*)). Lyll's specimens are viviparous and, although less like *P. pratensis* than mine, were once reported by Simmons (1906, p. 169) as belonging to *P. pratensis*, but he later (1913, p. 48) changed his mind and put them with *P. arctica* (sub nom. *P. cenisia*).)
3. N. BAFFIN: o. Pond Inlet, Polunin 1934 and 6 incl. 665 apprg. *P. arctica*; Arctic Bay, Polunin 1936.
 4. C. BAFFIN: o. Pangnirtung, Soper 1924 (O) incl. apprg. *P. arctica*, Polunin 1934 and 6 incl. 584 apprg. *P. arctica*; Nettiilling Lake, Soper 1925 (O) incl. apprg. *P. arctica*.
 5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Amadjuak Bay, Soper 1926 (O); Cape Dorset, Polunin 1934 and 6.
 7. N. LABRADOR: f. Burwell, Malte 1927 (O,G), Polunin 1931, 4, and 6.
 8. N. QUEBEC: c. Diana Bay, Knapp 1936; Payne Bay, Ney and Courtright 1936; "Stupart Bay" (Payne ex Lawson 1887, p. 212); Wakeham Bay, Johansen 1927 (C), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O), Polunin 1934 and 6; Cape Smith, Polunin 1936.
 9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 737 1342 1343 as "*P. rigens*." *Southampton Island*, South Bay, Manning 1934.
 10. W. COAST HUDSON BAY: o? Chesterfield, Polunin 1936 incl. 2136 2195 (2204 pars) short spikelets, and 2204 pars apprg. *P. arctica*.

40. *Poa alpina* L., Sp. Pl. ed. 1, p. 67 (1753).

This is another very variable species: and another in which, when I had only a few specimens, several forms seemed to stand out rather well; but now in the more abundant material before me they may be seen to merge into one another, appearing in most cases to be mere ecological phases, so that only the outstanding ones will be further considered here.

(1) In the more dry and exposed habitats reached by the species the plants are much reduced, the leaves remaining broad but only 1-3 cm. long, and the culms being generally less than 20 cm. high and often very dwarfed. However, even where it is most frequent, viz., towards the northernmost boundary of the species (both within our area and, as I have seen, in Spitsbergen) this form passes over into large and more typical ones in favourable localities. Hence, it is merely a *forma* without geographical delimitation and must be styled

f. *brevifolia* (Gaudin) Polunin in Canadian Field-Naturalist LII, p. 7 (1938).

This form, normally well marked, occurs here and there throughout the range of the species in our area, but is especially frequent on the dry and exposed limestone plains of Akpatok and Mansel Islands.

(2) A narrow-leaved, slender form with rather small spikelets, which occurs in several places, seems referable to var. *frigida* (Gaudin) Reichenb.

(3) In the most favourable manured habitats along the south coast of Hudson Strait there sometimes occurs in places a luxuriant form with coarse, broad leaves and light-coloured spikelets, which seems referable to var. *Bivonae* (Parl) St. John (1922, p. 43). However, this also shows gradations into the typical and other forms, some examples being indistinguishable from a specimen I have seen from southern Colorado labelled by St. John as "approaching var. *Bivonae*."

(4) Finally, as has already been noted above, *Poa alpina* shows transitions into several of the other *Poa* species of the region, in particular *P. glauca* and *P. pratensis* s.l. Moreover, I have one specimen (Port Burwell 1934, No. 879) that combines so many of the characters of *P. alpina* and *P. arctica* that it is to be noted as a probable hybrid between these two species. Fortunately no viviparous forms have been found within our area.

General Distribution. The whole species circumpolar; arctic and alpine, reaching higher latitudes in Europe than in the New World. Northernmost record Raudstupet in Murchisonfjord, c. 79° 58' N. in North-East Land, Spitsbergen Archipelago (Scholander 1934, p. 93 var. *vivipara*; the head form occurs in the same archipelago a little to the southwest (Polunin 1933, field notes)).

E. Arctic Distribution. General in the south (except that it appears to be absent from the west coast of Hudson Bay), with scattered stations northwards to about 71° N. in Baffin; all reports from farther north, including the oft-quoted ones from Ellesmere, are almost certainly erroneous.¹

Occurrence. Rather rare, and probably limited to snowdrift areas—except in the extreme south where it is fairly common and less exacting in habitat although probably always well covered with snow in winter. It grows chiefly on the earthy sides of snowdrift areas, towards the margin where the snow does not melt too late, and where the soil is rich in humus resulting from the decomposition of *Salix* and other leaves that are blown on to the surface of the snow in spring or early summer from areas around that are already bare. In such situations *P. alpina* may be locally quite frequent, but it is never of major ecological importance except as an indicator.

(N. BAFFINS ? *Admiralty Inlet*, Saputit, Mathiassen 1922 (*)²)

4. C. BAFFIN: o. "Scotts Bay" (Taylor 1863, p. 332); Cape Searle, Taylor 1860 (K). *Cumberland Gulf*, Taylor 1860 (O,B), (Kumlien 1879, p. 166).

5. S. BAFFIN: l. *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O,G), Polunin 1934 and 6 incl. 342 1144 cf. var. *frigida* and 418 429 1164 2326 f. *brevifolia*.

(MELVILLE PENINSULA: ? "Interior" (Rae 1850, p. 215).)

7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell (O); Burwell, Hantzsch 1906 (D*), Johansen 1927 (C), Malte 1927 (O,G,C), Polunin 1931, 4, and 6 incl. 1112 f. *brevifolia*, 448 cf. var. *frigida*, 881 1100 cf. var. *Bivonae*, and 879 apparent hybrid with *P. arctica*; Grenfell Tickle, Potter and Brierly 1934 (G).

8. N. QUEBEC: f. Wakeham Bay, Polunin 1936 incl. 1405 f. *brevifolia*; Sugluk, Polunin 1936 incl. 1482 cf. var. *Bivonae*; Wolstenholme, Polunin 1936; Cape Smith, Malte 1928 (O,G), Polunin 1936.

9. ISLANDS IN HUDSON, ETC., BAYS: l. Akpatok Island, Polunin 1931 (B) incl. f. *brevifolia*; Mansel Island, Leechman 1936 f. *brevifolia*. *Southampton Island*, South Bay, Polunin 1936.

¹ Thus Simmons (1906, p. 167) excludes it entirely from the Ellesmere flora and adds (1913, p. 49) "I think it best to exclude all statements which are more or less improbable and not supported by any specimens". The literature, at least where it is the result of the efforts of amateurs or others not directly interested in the Arctic, is so full of errors that I have myself found this the only reasonable policy to follow with almost all species. In the present instance it may be noted that the specimen on which Greely's report of *P. alpina* is based quite clearly belongs to another species (See p. 74).

² In citing this specimen as *Poa alpina*, Grøntved (1936, p. 22) says "a very scanty sample, not unlike the named species; determined by Ostenfeld; I consider the determination rather uncertain".

41. ***Poa labradorica*** Steud., Syn. Pl. Gram., p. 252 (1854) (not as printed on the title page 1855—See Jour. Bot. XXXVII, pp. 33-4 (1899)).

The ecology and requirements of this peculiar and localized species are almost entirely unknown, just as the habitat of the one collection from our area was not recorded (cf. Fernald 1929, p. 45). However, it seems highly probable that the habitat is similar to the only one that I have observed for the species, at Hebron not so far to the south. There it grew on the flat, muddy shores of a little brackish estuary, in a thick mat of *Puccinellia phryganodes* and dwarfed *Carex salina*, from which the occasional coarse culms stood up conspicuously although still only half-grown, looking like no other grass I had ever seen. This habitat is similar to the one described by Hultén (1927, p. 128) for *P. macrocalyx* Trautv. and Meyer, which indeed, like *P. eminens* Presl, seems to be closely related to *P. labradorica*, although apparently specifically distinct (cf. Fernald 1929, pp. 44-6).

General Distribution. Known only from the Atlantic coast of Labrador, the northernmost station being the only record from within our area (60° 10' N.).

E. Arctic Distribution. Apparently limited to the Atlantic coast of Labrador in the extreme southeast corner.

Occurrence. Local and rare; probably limited to saltmarsh areas (See above). The only collection from within our area is in anthesis and has culms 40 cm. high.

7. N. LABRADOR: r. Bowdoin Harbour, Sewall 1927 (G).

42. ***Colpodium fulvum*** (Trin.) Griseb. in Ledeb., Fl. Ross. IV, p. 385 (1853).

Arctophila fulva (Trin.) Rupr.

Graphephorum fulvum (Trin.) A. Gray

Holm (1922, pp. 6B *et seq.*), wishing to obtain recognition for a whole series of very dubious species that he had begun publishing 20 years previously in the section *Arctophila*, which would then "constitute an excellent little genus," speaks of *Colpodium* in the extended sense in which we are using it as "an aggregate of incongruities," in which "it seems difficult to find any good ground for admitting species of so little affinity as those of *Arctophila* and still crediting the genus to Trinius." But as there can be little doubt that the arctic plants of this series all belong to one circumpolar and polymorphic species—cf. Gelert (in Ostenfeld 1902, pp. 118 *et seq.*) and Hultén (1927, p. 137)—and as the lines separating the sections (and often the genera as usually accepted hereabouts) are so very indefinite, it seems best to use the above name; indeed it is common experience that generic definitions have to be extended as new forms are discovered.

Now the true *Poa fulva* of Trinius had the panicle lax and more or less pendulous and with 3-6 florets in each spikelet, as have most plants from the subarctic regions lying south of our area (e.g., Churchill, Polunin 1936, No. 1869), which are thus legitimately referable to the typical form.

So, too, is one specimen from Southampton Island (Polunin 1936, No. 2293), which had according to my notes the "terminal spikelet four-flowered until I pipped it out" and most of the others three-flowered. Also having often four flowers in the spikelet are the plants collected from nearby Nottingham Island by Robert Bell in 1884, which formed part of the material from which Holm (1907, p. 337) described his *Arctophila trichopoda*. Even if this latter is in its one real "character" a rather marked form, it cannot possibly be maintained as a distinct species, and, as the material on the type sheet is sadly mixed, consisting as it does largely of *Dupontia*, it seems best to discard the name altogether. I, therefore, propose

f. **aristatum** n. nom.

(*Arctophila trichopoda* Holm p. min.)

Lemmata distincte breve-aristata saltem aliquis spiculorum. Holm's type is in Herb. Ottawa; my No. 1229 from Lake Harbour has the lemma awned and can, accordingly, be referred here, although otherwise belonging to f. *depauperatum* (q.v.), as the culms are low and the spikelets one-flowered.

However, most material from Southampton Island and all from Chesterfield has the panicle upright and with more rigid branches, and spikelets only two- or three- (or occasionally one-) flowered. This is exactly the plant distinguished by Lange as *Arctophila effusa*, the only representative of the genus in Greenland, and, as it has marked geographical delimitation in forming a belt along the northern fringe of the species, seems deserving of retention as a variety, even if it does run into the typical form in the south. Hence, I uphold

var. **effusum** (Lange) Polunin in Jour. Bot. LXXVI, p. 96 (1938).

In its northernmost localities this variety is dwarfed, has narrower leaves, and is generally barren, but, when it does flower, produces tiny spikelets which are regularly only one-flowered. Such plants are distinguishable as

var. **effusum** f. **depauperatum** (Nathorst) n. comb.

(*Arctophila effusa* f. *depauperata* Nathorst, Spetsb. Kärlev., p. 32 (1883); *Colpodium Malmgreni* Anders.)

General Distribution. The species circumpolar; generally subarctic or low-arctic, but reaching far northern Spitsbergen, where its northernmost limit appears to be in a stream at 78° 58' N. in Kongsfjord (Polunin 1933, field notes).

E. Arctic Distribution. Fairly general in both the mainland and insular regions of the extreme south, and extending northwards to the Arctic Circle in Baffin.

Occurrence. Rather uncommon or even rare as elsewhere in North America (cf. Holm 1922, p. 7B). Grows chiefly in water that is not more than about 40 cm. deep, around the margins of small lakes in regions that are not too exposed, in some places forming quite extensive and luxuriant beds, the culms being up to 60 cm. tall in the most favourable and sheltered situations. More rarely to be found on wet silt out of the water.

4. C. BAFFIN: r. *Nettilling Lake*, Foxe Island, Soper 1925 (O) 125643 sterile, but prob. var. *effusum*; Koukdjuak River, Soper 1925 (O) 125644 var. *effusum* f. *depauperatum*.
5. S. BAFFIN: r. Lake Harbour, Polunin 1936 var. *effusum*, var. *effusum* f. *depauperatum*, and f. *aristatum*.
8. N. QUEBEC: r. Cape Wales, Bell 1884 (O, pars) 29504 as "*Hierochloe alpina*"; near Ice Harbour, Low 1898 (O) 23057 var. *effusum* as "*Dupontia psilosantha*."
9. ISLANDS IN HUDSON, ETC., BAYS: f. Nottingham Island, Bell 1884 (O) f. *aristatum* (See below, sub nom. *Arctophila trichopoda*). *Southampton Island*, (?Lyon ex Hooker 1825b, p. 196, sub nom. *Aira aquatica*); South Bay, Malte 1928 (O,G) 120581 var. *effusum*, Sutton 1930 (G) var. *effusum* incl. as "*Elymus arenarius* var. *villosus*," Manning 1934 var. *effusum*, Polunin 1934 and 6, 2293 typical form and rest var. *effusum*; Walrus Island, Baird 1936 var. *effusum*; Coats Island, Porsild 1930 (O) var. *effusum*.
10. W. COAST HUDSON BAY: l. 'Point Look Out', Herd (K, pars) var. *effusum* as "*Dupontia Fisheri*"; Chesterfield, Polunin 1936 var. *effusum*.

Arctophila trichopoda was described by Theo. Holm (1907, p. 337) from "Mansfield" (Mansel) and Nottingham Islands. It is not a distinct species, but is in part *Colpodium fulvum* f. *aristatum*, as is explained above, and in part another genus altogether.

43. ***Dupontia Fisheri***¹ R. Br. in Suppl. App. Parry's 1st Voyage, p. ccxci (mispaged exci) (1824).

Numerous writers from the time of Nathorst (cf. 1883) have pointed out the impossibility of keeping *D. psilosantha* Rupr. as a distinct species, although recently Scholander (1934, p. 69) has advocated its maintenance as a variety of *D. Fisheri*. To be sure, Robert Brown's type material from Melville Island¹ has the glumes more or less obtuse and the lemmas hairy at the base, but almost anywhere within the range of the species one can find all stages of transition to "glumae . . . acutissimae, caudatae" and pales "glaberrimi, acuminati" (See Figure (b) on Plate II). Therefore, I do not feel that it is worthy even of varietal rank, but, as it is so strikingly different, at least in its extreme development, from Robert Brown's plant, in company with which it almost always grows, propose to uphold it merely as

f. ***psilosantha*** (Rupr.) n. comb.

(*Dupontia psilosantha* Ruprecht, Fl. Samoied. Cis., p. 64 (1845).)

In the same light do I view the plant described by Holm as *Dupontia micrantha*. At first this did seem to me distinct, despite the contrary contentions of Gelting (1934, p. 191), but in 1936 I made numerous field observations on *Dupontia Fisheri* in different parts of the Eastern Arctic and found such a great range of variation, over and over again and even in closely contiguous plants in the same stand, that I am convinced that Holm's plant is a mere *forma depauperata*—generally a competition effect. I have even seen typical *D. Fisheri*, its f. *psilosantha* (which seems to be the commonest form in our area), and "*D. micrantha*" growing in the same square metre with almost all conceivable intermediates and also a whole

¹ Collected by Mr. Fisher, for whom it was named, and hence the frequent interpolation of a "c" in the middle of the specific name is entirely wrong.

exhibition of overcrossing characters, which makes me very doubtful as to whether any of them are worth designating separately. The very most I can do for *D. micrantha* is to propose it as

f. *micrantha* (Holm) n. comb.

(*Dupontia micrantha* Holm in Fedde, Repert. nov. sp. regni vegetabilis III, p. 337 (1907).)

There is, however, a third quite striking form which, although it has turned up in many parts of the Eastern Arctic and shows frequent gradations into the others, does not appear to occur over most of the rest of the great area occupied by the species and so, being geographically delimited, seems to deserve varietal rank:

var. *aristata* Malte n. var.

Brevi nigra arista exsuperante lemmata. Figure (c) on Plate II. Type in National Herbarium of Canada at Ottawa, cotype in Gray Herbarium of Harvard University. This variety was first found at Albert Harbour (Pond Inlet) in Baffin on Aug. 14, 1927 (No. 118831) by the late Dr. M. O. Malte, who named it provisionally on herbarium labels but left no diagnosis. However, the name is in itself so expressive that there can be no doubt as to what Dr. Malte meant, and, therefore, I feel justified in using his name as the authority. Since Dr. Malte's death I have found this variety at no less than eight new localities within our area, and have seen specimens belonging to it from a further three.

Other forms occurring in our area (which do not, however, seem to deserve names) are a rare one with very short panicle-branches, and a common one that occurs in most of the favourable southern localities. This is in all ways so crass, with tall straight axes and heavy broad spikelets, that Dr. Malte wrote a new specific epithet on some of his sheets of it.

It is indeed remarkable to see similar awned forms cropping up in the three arctic and more or less monotypic genera *Arctagrostis*, *Colpodium*, and *Dupontia*. None of these is supposed to have awns, whose parallel appearance in the three series seems to be yet another indication that they and perhaps some other arctic grasses are systematically closer together than is generally supposed.

General Distribution. Circumpolar; almost all over the Arctic, to which it is largely confined. Northernmost record "Southernmost peninsula of Phippsøya in Sjuøyane," c. 80° 50' N. in the Spitsbergen Archipelago (E. Dahl 1937, p. 35).¹

E. Arctic Distribution. Probably complete at the lower altitudes on ice-free land except in Ellesmere, where it has been recorded only from the south coast.

¹ I can find no confirmation of the mention in *Flora Arctica* (Ostenfeld 1902, p. 115) of the species reaching 81° 30' N., and there are, moreover, several suggestions that this report is erroneous.

Occurrence. One of the most abundant and ecologically important plants of muddy or marshy places, whether the water be fresh or slightly brackish, over most of our area; but less common in the extreme south and very likely absent from northern Ellesmere. Varies greatly in robustness and height according to local conditions, or even between closely contiguous plants growing under apparently identical conditions, being anything from 10 to 50 cm. high, although generally about 25 cm. It sometimes forms almost pure beds locally, or may dominate mixed marshes, but in the latter is liable to have to take a secondary place to *Arctagrostis* or one of the *Eriophora* or *Carices*. In halophile seashore areas (to which it is not, however, by any means confined—contrast Porsild 1920, p. 39) it forms perhaps its best and purest beds, which are “easily recognizable by the striking red-brown colour” (cf. Porsild, l.c.). Like *Arctagrostis* and *Colpodium* it seems rarely to set ripe seed except perhaps in the extreme south.

1. ELLESMERE: r. *South Coast*, “Falcon Cliff in Goose Fiord” (Simmons 1906, p. 161); ? “West side of Walrus Fiord” (Simmons 1906, p. 161).
2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Polunin 1934 and 6; between Beechy Island and Northumberland Sound, Lyall 1852 (K). *Somerset Island*, Port Leopold, Malte 1927 (O,G); Port Kennedy, Walker 1858 (K).
3. N. BAFFIN: f. Albert Harbour (Pond Inlet), Malte 1927 (O,G) 118831 var. *aristata*, Polunin 1934 and 6 incl. 666 683 739 var. *aristata*; Arctic Bay, Malte 1927 (O,G) 118859 var. *aristata*, Polunin 1936.
4. C. BAFFIN: f. Clyde, Malte 1927 (O,G) 118860 var. *aristata*, Polunin 1934 and 6. *Cumberland Gulf*, Kingnait, Taylor 1860 (O,K,B) incl. as “*Hierochloe pauciflora*”; “other localities” (Taylor 1863, p. 333); Pangnirtung, Polunin 1934.
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Polunin 1936 incl. 1211 var. *aristata*; Cape Dorset, Malte 1928 (O,G) var. *aristata*, Polunin 1934 and 6.
6. MELVILLE PENINSULA: f? Igloolik, Parry (B). “*Interior*” (Rae 1850, p. 215), ? Edwards (K) as “*Graphephorum Fisheri*,” ? Ross (L). *Vansittart Island*, Mathiassen 1921 (C) 143 147 as “*Arctagrostis latifolia*”; Repulse Bay, Olsen 1922 (C).
7. N. LABRADOR: o. Port Burwell, Malte 1928 (O,G), Polunin 1934 and 6.
8. N. QUEBEC: c. Payne Bay, Ney and Courtright 1936; Cape Wales, Bell 1884 (O); Wakeham Bay, Polunin 1936 incl. 1431 1433 1444 1448 var. *aristata*; Sugluk, Polunin 1936 incl. 1487 1509 1521 1528 var. *aristata*; Wolstenholme, Polunin 1936 incl. 1277 var. *aristata*; Cape Smith, Polunin 1936 incl. 1316 1330 var. *aristata*.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Nottingham Island, Bell 1884 (O), Mackenzie 1886 (O), Johansen 1927 (C); Mansel Island, Bell 1884 (O) 14712 14713, Leechman 1936. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 195); South Bay, Malte 1928 (O,G), Sutton 1930 (G), Polunin 1934 and 6 incl. smutted, and 136 144 var. *aristata*.
10. W. COAST HUDSON BAY: f. ‘Point Look Out,’ Herd (K, *pars* with *Colpodium fulvum* var. *effusum*); Fullerton, Macoun 1910 (O,N,C) 79108 var. *aristata*; Chesterfield, Malte 1928 (O,G), Gardner 1933 (G), Polunin 1936 incl. smutted, and 2167 2173 var. *aristata*; Rankin Inlet, Macoun 1910 (O,C) as “*D. psilosantha*.”

44. ***Puccinellia phryganodes*** (Trin.) Scribn. and Merrill in Contr. U. S. Nat. Herb. XIII, 3, p. 78 (1910).

Glycerina maritima of authors, not (Huds.) Wahlenb.

G. reptans Laestad.

G. vilfoidea (And.) Th. Fr.

Atropis maritima (Huds.) Griseb. var. *reptans* (Hartm.) Simmons

Besides the synonyms mentioned above, and some others that are of less importance in arctic literature, I have also seen the plant referred to under *Poa*, *Catabrosa*, and *Molinia*. Hence, its systematic position has long been a source of controversy, although there can hardly be any doubt that it belongs with *Puccinellia*. As already pointed out (MS. in Herb. Ottawa) by the late Dr. Malte, Fernald and Weatherby (1916, p. 8) describe the species as having the panicle "2-3.5 cm. long, barely exerted, with few smooth short erect branches and pedicels" and figure it accordingly (Plate 114, Figure 7), whereas material from north of the area considered by these authors, and from Greenland, has the panicles more often 4 or sometimes reaching 5 cm. in length, with the lower branches ascending obliquely or sometimes spreading horizontally or even reflexed. The lengths of the spikelets and the glumes may also exceed the measurements given by Fernald and Weatherby for the species farther south, the northern plant being relatively more robust, often forming close mats several metres in diameter. Fernald and Weatherby (1916, p. 9) also point out that "the numerous flagelliform stolons" which are so characteristic of the species "should not be taken as an absolute diagnostic character since *P. paupercula* and its var. *alaskana* occasionally have stolons which in all characters appear inseparable from those of *P. phryganodes*." However, in our area I never saw stolons on any example of the rather abundant *P. paupercula*, which is moreover of very different, tufted habit. Finally, *P. phryganodes*, even in the rare examples on rather dry areas where no stolons can be found, is (except in the Far North) rarely without a flowering axis, whose long anthers (some remains of which are generally to be found even in late summer) distinguish the plant immediately from the other species.

General Distribution. Circumpolar; around the coasts of all arctic lands. Northernmost record southwest coast of Hendrik Island, 82° 3' N. in Greenland (Wulff ex Ostenfeld 1923b, p. 232).

E. Arctic Distribution. Probably complete around all coasts where "live" glaciers do not reach the sea, fragments of the stolons being spread by the ice (cf. Simmons 1906, p. 160).

Occurrence. Confined to the shores of the sea and brackish lagoons, where it is generally abundant and practically never absent, although often overlooked. Where the shores are muddy it spreads over the surface to form luxuriant mats, generally of a reddish hue and reaching only up to the level of the highest spring-tides. Altogether the most universal and important of the halophytes within the area, although not exceeding about 15 cm.

in height. It flowers generally rather sparingly, and probably not at all in the northernmost localities (cf. Scholander 1934, p. 95); I have never seen ripe grains.

1. ELLESMERE: c. *Hayes Sound*, five localities (cf. Simmons 1906, p. 160), e.g., Cape Rutherford, Simmons 1898 (C). *South Coast*, several localities (cf. Simmons 1906, p. 160), e.g., Craig Harbour, Malte 1927 (O,G), Polunin 1934 and 6, Fram Fiord, Simmons 1899 (N,K) 1634.
2. DEVON, ETC., ISLANDS: c. *Devon Island*, Dundas Harbour, Malte 1927 (O,G), Polunin 1934 and 6. *Somerset Island*, Port Leopold, Malte 1927 (O,G).
3. N. BAFFIN: c. *Bylot Island*, Qaersut, Freuchen 1924 (O,C); Pond Inlet, Malte 1927 (O,G), Polunin 1934; Arctic Bay, Malte 1927 (O,G), Polunin 1936.
4. C. BAFFIN: c. Clyde, Polunin 1934. *Cumberland Gulf*, Pangnirtung, Malte 1927 (O,G), Polunin 1934 and 6; Kekerten Island, Taylor 1860 (K) as "*Poa angustata*"; Kingua Fiord, Soper 1924 (O).
5. S. BAFFIN: c. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O), Polunin 1934 and 6; Cape Dorset, Malte 1928 (O,G,C), Polunin 1934 and 6.
7. N. LABRADOR: c. Port Burwell, Malte 1927 and 8 (O,G), Polunin 1934 and 6; Bowdoin Harbour, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G,C), Polunin 1934 and 6; Cape Smith, Malte 1928 (O,G).
9. ISLANDS IN HUDSON, ETC., BAYS: 1? *Southampton Island*, South Bay, Malte 1928 (O,G), Polunin 1934 and 6.
10. W. COAST HUDSON BAY: 1? Chesterfield, Malte 1928 (O,G,C), Polunin 1936.

45. ***Puccinellia paupercula*** (Holm) Fernald and Weatherby in *Rhodora* XVIII, p. 18 (1916).

P. tenella of American authors

In Kjellman and Lundstrom (1883, p. 153) Lange published his *Glyceria tenella* from "sinu Rogatschew insularum Nova-Semlja et ad promontorium grebeni insulae Wajgatsch" as being "spiculis...circa 3-floris...glumis obtusiusculis," whereas in *Flora Arctica* (in Ostenfeld 1902, p. 30) Gelert characterizes this species as "spikelets 4-6 flowered...glumes...acute." Again, Lange continues "palea inferiore violacea vel viridi, anguste albo-marginata...leviter erosa, 3-5 nervis," whereas Gelert has it "lower pale narrow,...with 5 prominent veins, green, tinged with violet at the margins." It is thus clear that Gelert was describing a different plant from Lange's *Glyceria tenella*; it was, in fact, a specimen (probably from West Greenland) of the plant later published by Holm as *Glyceria paupercula*. I have seen the type specimen of this, and all our Eastern Arctic material belongs to it; on the other hand true *Glyceria tenella* is apparently absent from the New World, and hence is to be excluded from our flora. Both these species are now included in the genus *Puccinellia*, ours being as named above. It is common and quite distinctive, especially in the delicately curved bases of the axes, and in the tiny lower glumes. The culms are, however, always ascending, Holm's description of them as "curved and decumbent" having reference merely to the type specimen, which has apparently been carelessly squashed. In the south *Puccinellia paupercula* is generally between 10 and 20 cm. high, of a delicate pink in parts, with

some of the branches of the panicle spreading quite broadly; but in the north it is considerably smaller, often reddish purple practically all over, and has the panicle almost always contracted.

It should also be noted that Fernald and Weatherby (1916, p. 18) give the grain of this species as "about 2 mm. long", but my material has grains ranging from 1.3-1.6 mm. in length, never reaching 2 mm. In Holm's type this character cannot be measured, as the plant is only just past anthesis.

General Distribution. American, transgressing into eastern Asia; possibly still more widespread¹ as it had not previously been recorded north of the type locality (Mansel Island, around 62° N. in Hudson Bay, and not as has been stated "Mansfield Island on the coast of Labrador"), but now we know it to be plentiful northwards almost everywhere to Dundas Harbour, 74°35' N. in Devon Island. This is its northernmost known station (Polunin 1936, field notes).

E. Arctic Distribution. General along sea-coasts from Lancaster Sound southwards, but not known in Ellesmere.

Occurrence. Frequent to locally abundant along muddy sea-shores and by the margins of brackish lagoons. Exclusively a strand plant confined to saline habitats, and, like many of this category, very generally overlooked. Unable to withstand competition, it is often ousted by *P. phryganodes* or *Carex ursina*, and is largely confined to open habitats. Nevertheless, to be found almost everywhere it is looked for in the southern two-thirds of our area.

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1936.
3. N. BAFFIN: o. Pond Inlet, Polunin 1934; Arctic Bay, Malte 1927 (O,G) 118460 118461 118466, Polunin 1936.
4. S. BAFFIN: f. Clyde, Polunin 1936. *Cumberland Gulf*, Taylor 1860 (K) as "Poa cenisia?" (reported by Simmons (1913, p. 52) as *Atropis tenella* (Lange) Simmons) and 1861 (K) as "Glyceria angustata"; Pangnirtung, Soper 1924 (O) 111700, Malte 1927 (O,G) 118458 118459, Polunin 1934 and 6; Kekerten Island, Taylor 1860 (B) as "Poa angustata".
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1928 (O,G) 120326, Polunin 1936; Cape Dorset, Malte 1928 (O,G) 120341 120345, Polunin 1934 and 6.
- (MELVILLE PENINSULA: ? Parry (B) no loc. or date—specimen from Parry's second expedition, which spent most of its time here.)
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K); Port Burwell, Malte 1928 (O,G) 120066; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G) 120951, Polunin 1934.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Mansfield (Mansel) Island, Bell 1884 (O) 34782 type specimen; Nottingham Island, Johansen 1927 (C). *Southampton Island*, South Bay, Malte 1928 (O,G) 120655, Polunin 1934.
10. W. COAST HUDSON BAY: f. Chesterfield, Malte 1928 (O,G) 120428 120498, Polunin 1936; Rankin Inlet, Macoun 1910 (O,G,N) 79116 79117 as "Glyceria angustata" but rev. Fernald and Weatherby as *P. paupercula*.

¹ Thus Lynge (1923, p. 127), writing of the Arctic in general, aptly remarks "It is quite astonishing to what an extent the species of *Puccinellia* have escaped the attention of botanists in these countries".

46. *Puccinellia angustata* agg. (R. Br.) Rand and Redfield, Fl. Mount Desert Isl. Maine, Cambridge, Mass., p. 181 (1894).

Glyceria angustata (R. Br.) Th. Fr.

Atropis angustata (R. Br.) Griseb.

The material from within our area that I have referred to this species is by no means uniform. Thus it varies enormously in height (from less than 10 to more than 40 cm.) and in the shape of the panicle, and to a lesser extent in the size and shape of the spikelets and glumes and the hairiness of the lemmas. At first I thought it included a separate element, which should be referred to var. *vaginata* (Lange) Holmb., and another in the south-east that might be *P. retroflexa* (Curt.) Holmb. subsp. *borealis* Holmb.¹. But comparison with authenticated specimens of these plants showed that they could not be distinguished in our area (cf. Devold and Scholander 1933, pp. 148-9, and Scholander 1934, p. 95); and so, as the characters are variable and I must admit that I do not fully understand the group, I have retained under *P. angustata* all the plants that belong to the same form-series as Robert Brown's original *Poa angustata*. Indeed, most of my material compares tolerably well with the type specimen of this collected by Edwards on Melville Island during Parry's first voyage: when other characters fail it is most easily distinguished from *P. paupercula* by its slightly scabrous panicle-branches and larger and thinner, ciliolate glumes; from *P. Vahlia* by the glumes being very unequal; and from *P. phryganodes* by the short anthers. However, taken all together the material that I have included under *Puccinellia angustata* is a most unsavoury aggregate; in the Lancaster Sound region where *P. paupercula* appears to have its northern limit there occur forms that seem to connect this species with *P. angustata* and possibly also *P. Vahlia*.

General Distribution. Circumpolar, all over the Arctic. One of the few plants brought back by Col. I. P. Koch from the world's northernmost botanical locality but one, viz., Frederick E. Hyde Fiord, 83°15' N. on the north coast of Greenland (cf. Ostenfeld and Lundager 1910, p. 14).

E. Arctic Distribution. General or almost complete around coasts in the north and possibly also in the south, although not yet recorded from some considerable areas.

Occurrence. Fairly common, although perhaps less so than the previous two species, and less confined to the actual sea-shore, although never found far from it by me. Thus it often occurs on clay plains and moraines where the soil-water is scarcely if at all brackish; also around ruined igloos and on manured ground, where it may grow in luxuriant tufts whose culms attain a height of as much as 40 cm. even in the Far North.

¹ I dare not make a pronouncement founded on memory alone, at least where I have had no opportunity of comparing the material, but it seems to me that the *Puccinellia* of this affinity which is so common at Wakeham Bay in northern Quebec, and which is simulated by one recently collected by Prof. David Potter (1937, No. 8309) at Point Brewster, southeast Baffin, is the same as the one that is most common in southwest Greenland, and which may perhaps be *Puccinellia arctica* (Hook.) Fernald and Weatherby.

1. ELLESMERE: c. Numerous localities all around the coast (cf. Simmons 1906, pp. 157-8, sub nom. *Glyceria angustata* and *G. distans*), e.g., Grant Land 82°27' N., Wolf 1906 (N), Discovery Harbour, Hart 1875 (K,B), Franklin Pearce Bay, Feilden 1875 (K), Fram Harbour, Simmons 1899 (K) 4240 as "*Glyceria distans* var. *arctica*". South Coast, Fram Fiord, Simmons 1899 (N,C) as "*Glyceria angustata*"; Goose Fiord, Simmons 1901 (O,G,N,K,C) 3436 3585 4247 as "*Glyceria distans* var. *vaginata*"; Musk-ox Fiord, Simmons 1900 (N) 2149 as "*Glyceria distans* var. *arctica*."
2. DEVON, ETC., ISLANDS: c. "North Kent Island" (Simmons 1909b, p. 20). Devon Island, several localities (cf. Simmons 1913, pp. 52-3), e.g., Dundas Harbour, Malte 1927 (O,G), Polunin 1934 and 6, ? Powell Creek, Lyall (K), Beechy Island, Lyall 1854 (K,S*), MacMillan 1908 (O) 77271, Malte 1927 (O,G).
3. N. BAFFIN: o. Bylot Island, Button Point, Wilcox 1928 (O) 125617 as "*Festuca rubra*"; Pond Inlet, Polunin 1934; Arctic Bay, Polunin 1936.
4. C. BAFFIN: o. Cumberland Gulf, Pangnirtung, Polunin 1934; Kekerten Island, Taylor 1860 (O,K) 29118 as "*Poa angustata*."
5. S. BAFFIN: o. Frobisher Bay, Point Brewster, Potter 1937. South Coast, Lake Harbour, Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. "Interior" (Rae 1850, p. 215); Igloolik. Parry (K); Repulse Bay, Hooper (L*).
7. N. LABRADOR: r. Burwell, Polunin 1936.
8. N. QUEBEC: l. Wakeham Bay, Johansen 1927 (C) as "*P. retroflexa*," Malte 1927 and 8 (O,G) 118454 118455 118457 120267 120269 120271 120273 as "*P. angustata* var. *vaginata*," Polunin 1936; Digges Island, Bell 1884 and 5 (O) 39 29581.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B) incl. as "*P. vaginata*."
10. W. COAST HUDSON BAY: r? Chesterfield, Polunin 1936; Rankin Inlet, Macoun 1910 (C) 79116 as "*Glyceria maritima*" scr. Ostenfeld and Simmons and as "*P. paupercula*" scr. Holmberg.

Glyceria distans (L.) Wahlenb. (*Atropis distans* (L.) Griseb.) is recorded by Simmons (1906, p. 158, and 1913, p. 52) from many places within our area, following Gelert who in Flora Arctica (in Ostenfeld 1902, p. 127) "lumped" a number of different species under this name. The true *Puccinellia distans*, as it has now to be called, is a native of Eurasia and northern Africa. It is adventive and rapidly becoming naturalized in many parts of North America, but does not appear to occur within our area. The plants that Simmons identified under this heading mostly belong to *P. angustata*, which he distinguished only "with great hesitation."

47. **Puccinellia Vahlia** (Liebm.) Scribn. and Merrill in Contr. U. S. Nat. Herb. XIII, 3, p. 78 (1910).

Poa Vahlia Liebm.

Glyceria Vahlia (Liebm.) Th. Fr.

Although normally this plant is most distinctive among other members of the genus in its upright, broad-leaved form and non-saline habitat, occasional specimens are found that have the glumes not so long and less "subequal," and are thus somewhat suggestive of *P. angustata* or even of *P. paupercula*. Moreover, a good specimen in Herb. Ottawa, which also seemed to me quite typical, collected by Soper in 1923 at Craig Harbour, was named successively *Poa glauca* and *Poa abbreviata*, in the latter case by Prof. Ostenfeld—all of which shows how difficult these groups can be.

General Distribution. Circumpolar, chiefly high-arctic. Northernmost record $82^{\circ} 27' N.$, in Grant Land (Capt. H. W. Feilden, specimen in Kew Herbarium labelled "Found under the snow, when digging out the skull of a musk sheep 18th April, 1876").

E. Arctic Distribution. General over the northern half, with apparently isolated stations on calcareous areas in the south; perhaps extensively overlooked.

Occurrence. Fairly common in the north but rare in the south, where it seems to be limited to calcareous areas (as in East Greenland, cf. Gelting 1934, p. 212).¹ Grows chiefly on open, damp, clayey soils, and thus is frequently found on mud polygons or along the margins of their intervening tracts. Not at all a strand plant, often being found far inland and at high altitudes, unlike our other members of the genus. The "characteristic clue of undulate roots," white and fleshy, which are found also in other species of such damp, clayey habitats (e.g., *Catabrosa algida* and *Deschampsia brevifolia*) are well figured by Scholander (1934, p. 103).

1. ELLESMERE: c. *Grant Land* $82^{\circ} 27' N.$, Feilden 1876 (K). *Grinnell Land*, Dobbin Bay, Hart (K); *Walrus Island*, Hart 1876 (K). *Hayes Sound*, Feilden 1875 (K); *Bache Peninsula*, Malte 1927 (O,G); "Rutherford Valleys and Bedford Pim Island" (Simmons 1906, p. 156). *South Coast*, several localities (cf. Simmons 1906, p. 156), e.g., *Craig Harbour*, Soper 1923 (O,C) 111373 as "*Poa glauca*", and as "*Poa abbreviata*" scr. Ostenfeld, also 111374 as "*Poa glauca*," Polunin 1934 and 6, *Fram Fiord*, Simmons 1899 (G,K,C), *Harbour Fiord*, Simmons 1900 (C), *Goose Fiord*, Simmons 1901 (N) 3502.
2. DEVON, ETC., ISLANDS: f? *Devon Island*, "West Fiord" (Simmons 1909b, p. 7); *Dundas Harbour*, Polunin 1934 and 6.
3. N. BAFFIN: l. *Arctic Bay*, Malte 1927 (O, G), Polunin 1936.
4. S. BAFFIN: r. *Resolution Island*, *Acadia Harbour*, Potter 1937, No. 8335.
7. N. LABRADOR: r. *Burwell*, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Akpatok Island*, Polunin 1931 (B) 22 Nos. as "*Puccinellia angustata*." *Southampton Island*, *South Bay*, Polunin 1936.

Besides the above I have seen the following specimens, whose labels do not give a definite locality: (1) "Arctic America James Ross 1829-33" in the Gray Herbarium and the British Museum; (2) two specimens from Parry's second voyage in the British Museum; and (3) a sheet in the Kew Herbarium, which is this in part, labelled "*Poa abbreviata*" and collected in 1825 during Parry's third voyage.

48. *Festuca rubra* L., Sp. Pl. ed. 1, p. 74 (1753).

An up-to-date key of the "diverse plants" belonging to "this complex species" in eastern North America is given by Fernald (1933, p. 132), and although in our area *Festuca rubra* has been found only in the eastern half of the extreme south, three of the best-marked of its many forms occur there.

(1) The typical form, having the lemmas distinctly awned but glabrous, occurs at Port Burwell, where it is, however, mixed with individuals having the lemmas somewhat hairy and thus approaching the next form, which also occurs in the vicinity.

¹ The calcicolous habit is especially well marked in the south of our area—cf. Polunin (1939, p. 39).

(2) The commonest form within our area, which is generally the sole representative of the species in its northernmost localities (in Spitsbergen, Novaya Zemlya, and Greenland), has the lemmas awned and densely villous to lanate. This is the well-known

var. **arenaria** (Osbeck) E. Fries, Fl. Hall., p. 28 (1817).

It occurs in every known station of the species within our area.

(3) A peculiar form, occurring only at Wakeham Bay, where it is rare although var. *arenaria* is common, has the lemmas awnless and so is referable to

var. **mutica** Hartm., Handb. i Skand. Fl. ed. 3, II, p. 27 (1838).

This is approached by a specimen found at Churchill, to the south of our area.

General Distribution. The whole species circumpolar, chiefly temperate and subarctic, but reaching high latitudes in some places. Northernmost record Raudstupet, c. 79° 58' N. in North-East Land, Spitsbergen Archipelago (Scholander 1934, p. 73), in parts of which it is fairly common.¹

E. Arctic Distribution. Apparently limited to the eastern half of the extreme south, being known only from northern Labrador and Quebec and the intermediate Akpatok Island.¹

Occurrence. Fairly common within its limited area, where it grows in sandy spots chiefly low down near the sea, often forming fairly extensive mats when competition is absent or weak and the roots can find sufficient moisture beneath the surface. Generally its culms are only about 20 cm. high, but in manured or otherwise unusually favourable localities they may exceed 40 cm.

7. N. LABRADOR: f. Port Burwell, Malte 1928 (O,G,C) incl. var. *arenaria*, Porsild 1930 (O*), Polunin 1934 and 6 incl. 879 924 928 1096 2642 var. *arenaria*.

8. N. QUEBEC: f. Wakeham Bay, Malte 1928 (O,G) var. *arenaria* and 120265 var. *mutica*, Polunin 1936 var. *arenaria*; Sugluk, Polunin 1936 var. *arenaria*; Cape Smith, Polunin 1936 var. *arenaria*.

9. ISLANDS IN HUDSON, ETC., BAYS: 1. Akpatok Island, Polunin 1931 (B) incl. var. *arenaria*.

49. **Festuca vivipara** (L.) Smith, Fl. Brit. I, p. 114 (1800).

F. ovina L. var. *vivipara* L.

From the observations of Fernald (1926, p. 151) and Scholander (1934, pp. 73 *et seq.*) it would seem that this plant is best treated as a species separate from *F. ovina* or its other segregates. Certainly in our area it has a very different habit from any of these that I know, spreading as a thin investment over sparsely vegetated sandy banks and sending up only occasional tall, light-coloured culms. However, not far to the south

¹ The claims that have been made and frequently repeated of its occurrence in Canada as far north as Devon Island and Ellesmere are almost certainly unfounded (cf. Simmons 1906, p. 156, and 1913, p. 55), although it will be surprising if it is not one day found in southern Baffin, reaching as it does well north of 70° N. on both sides of Greenland. The record from Akpatok Island (Polunin 1934, p. 203) is the first authenticated one (det. Mr. J. E. Dandy) from the Arctic Archipelago, from whose flora Simmons (1913, p. 55) was prone to exclude this species.

of our area, both at Churchill and at Port Harrison, and again as I saw in 1937 in southwest Greenland, it tends towards the caespitose mode of growth normally exhibited elsewhere, in some places forming large tufts from which arise numerous axes in close profusion. All my material has the lemmas more or less hairy and so is referable to

var. **hirsuta** (Lange) Scholander apud Devold and Scholander, Fl. Pl. and Ferns of Southeast Greenland, p. 140 (1933).

General Distribution. The species probably circumpolar, in most places covering a wide range latitudinally. Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 231).

E. Arctic Distribution. Known only from Cape Smith in the extreme south, but more widespread on both sides of Hudson Bay south of that.

Occurrence. Only occasional even in its one station, as far as this could be investigated in the single afternoon I had ashore there, and as would be judged from its having been missed by previous visitors. All var. *hirsuta*:

8. N. QUEBEC: r. Cape Smith, Polunin 1936.

50. ***Festuca brachyphylla*** Schultes, Mant. III, p. 646 (1827).

F. brevifolia R. Br. (not Muehl.)

F. ovina L. var. *brevifolia* (R. Br.) Hart

F. supina of American authors, not Schur

F. ovina L. var. *supina* of authors

As was recently explained by Fernald (1935, p. 251) and Abbe (1936, p. 142), the arctic and alpine American plant is beautifully distinct from the central European *F. supina*, and also from *F. ovina*, which is apparently absent from the true Arctic (cf. Scholander 1934, pp. 69 *et seq.*). Robert Brown's publication of our plant as *F. brevifolia* in 1824 was, however, preceded by *F. brevifolia* Muehl., 1817, the first valid name being the one employed above.

This little plant must almost compete with *Poa arctica* for pride of place as the most abundant grass throughout our area; but although I have plentiful material from all parts, varying from the tiny tufts of exposed habitats with leaves a bare centimetre long and axes scarcely exceeding them to more normal plants 15 or 20 cm. high (I have never seen it exceeding 26 cm. in height), I can see no variation in any taxonomically important character, apart from the microspecies that follows below as No. 51. There is, however, a rather striking colour form, discovered by the late Dr. Malte at Lake Harbour in 1927, and also found by me in 1936 at Sugluk on the opposite shore of Hudson Strait. From his notes it appears that Dr. Malte intended to give this plant a varietal name, but I do not think this is justified, although it is certainly deserving of some designation. It is characterized by the glumes and lemmas being lastingly

a light greenish yellow, except towards their tips where they may take on a somewhat darker hue late in the summer. This is contrasted with the typical form, which has the glumes and lemmas (except occasionally in extreme youth) distinctly purplish, at least towards their tips, and finally becoming quite a dark purplish brown. Hence, I propose

f. *flavida* n. forma.

Spiculis perenne sufflavo-viridibus. Type in Herb. Ottawa, cotype in Herb. Gray: *M. O. Malte*, Lake Harbour, Baffin Island, No. 118374, 1927.

General Distribution. Circumpolar; all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 230).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Very common almost everywhere, growing in practically any habitat whose vegetation is sufficiently dwarfed and whose soil is fairly dry through the middle of the summer. Thus, occurring in a vast array of different associations, but particularly in dry, heathy areas and on the more barren gravel ridges where competition is at a minimum. It is extremely hardy, attaining exposed summits where it has no snow-covering in winter; hence, it is often very dwarfed, but still manages to flower and fruit. It is chiefly in such poorly vegetated areas that it is of ecological importance, for being rarely gregarious it has only a subsidiary place in most other communities.

1. ELLESMERE: c. "Grant Land" (Goodsell ex Rydberg 1911-12, p. 3); Cape Richardson, Hansen 1920 (C); Discovery Harbour, Hart (K). *Grinnell Land*, "Cape Frazer" (Hayes ex Simmons 1906, p. 155); Walrus Island, Hart 1875 (K). *Hayes Sound*, several localities (cf. Simmons 1906, p. 155), e.g., Feilden 1875 (K), Bache Peninsula, Malte 1927 (O,G) 118363, Cape Rutherford, Simmons 1899 (B) 1150, Bedford Pim Island, Simmons 1899 (C). *South Coast*, several localities (cf. Simmons 1906, p. 155), e.g., Craig Harbour, Malte 1927 (O,G) 118370 118371 118372, Polunin 1934 and 6, Fram Fiord, Simmons 1899 (C), Harbour Fiord, Simmons 1900 (G,K,C) 2444 2587, Goose Fiord, Simmons 1901 (N,B,C). *West Coast*, "Big (Stor) Island" (Schei ex Simmons 1909b, p. 25); "Nordstrand, between Eidsfjord and Baumann Fiord, Coal Bay" (Simmons 1906, p. 155).
2. DEVON, ETC., ISLANDS: c. "North Kent Island" (Simmons 1909b, p. 19, sub nom. *F. ovina*). *Devon Island*, "Cape Vera" (Simmons 1909b, p. 8); "Boat Point" (Schei ex Simmons 1909b, p. 6, sub nom. *F. ovina*); Cape Sparbo, Anderson 1928 (O); Dundas Harbour, Malte 1927 (O,G) 118366 118367, Polunin 1934 and 6; "Cape Riley" (McClintock ex Markham 1909, p. 246); Beechy Island, Pullen 1852 (K), Lyall 1854 (K,S*), McMillan 1908 (O) 77270; 'Wellington Channel', Lyall 1853 (K). *Somerset Island*, Parry (B) as "Trisetum subspicatum"; Cape Garry, Markham 1873 (K); "Port Kennedy" (Walker ex Hooker 1861, p. 85).
3. N. BAFFIN: c. *Eclipse Sound*, Pond Inlet, Polunin 1934 and 6; "Ponds Bay" (Walker ex Hooker 1861, p. 85); Tulukan, Mathiassen 1923 (C) 800, Soper 1923 (O,C) 111361; Qilalukan, Mathiassen 1923 (C) 777, Freuchen 1924 (O,C) 868. *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O,C); Arctic Bay, Malte 1927 (O,G) 118362 118367, Polunin 1936; Saputit, Mathiassen 1922 (C*) 109; Foss Fiord, Freuchen 1922 (C) 36; Gifford Fiord, Mathiassen 1922 (C) 125; Cape Griffith, Mathiassen 1922 (C) 84.

4. C. BAFFIN: c. Clyde, Malte 1927 (O, G) 118368, Polunin 1934 and 6; "Kivitung" (Boas ex Ambronn 1890, p. 98, sub nom. *F. borealis*). *Cumberland Gulf*, Taylor 1860 (O) as "*Phippsia algida*"; Milikdjuak Island, Taylor 1860 (K) as "*Festuca Richardsonsii*"; Kingnait, Taylor 1860 (K,B); Pangnirtung, Soper 1924 (O), Malte 1927 (O,G) 118364 118365, Polunin 1934 and 6; Kekerten, Kumlien 1878 (N) 1118.
5. S. BAFFIN: c. "Cape Haven" (Schuchert and White ex Holm 1900, p. 68, sub nom. *F. ovina* γ *alpina*). *Frobisher Bay*, Sewall 1927 (G) 239 pars, 249; Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Upper Savage Island, Bell 1884 (O); Lake Harbour, Malte 1927 and 8 (O,G) 118373 120322, and 118374 118375 f. *flavida*, Polunin 1934 and 6; Cape Dorset, Malte 1928 (O,G) 120368, Polunin 1934 and 6.
6. MELVILLE PENINSULA: c. Igloolik, Edwards (B), Parry 1823 (B,C). *East Coast*, Parry (B); Duckett Cove, Parry 1821 (C); Repulse Bay, Hooper 1821 (L). *Vansittart Island*, Bangsted 1923 (C); Georgina Island, Freuchen 1922 (C).
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K); Port Burwell, Hantzsch 1906 (D*) as "*F. ovina* var. *alpina*", Macoun 1910 (O,G) 79120 as "*F. ovina*", Malte 1927 (O,G) 118361 as "*F. ovina*", Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936; Stupart Bay, Payne 1886 (T) 6; Wakeham Bay, Polunin 1936; Sugluk, Malte 1928 (O,G), Polunin 1936 incl. 1513 f. *flavida*; Wolstenholme, Johansen 1927 (C), Malte 1928 (O,G) 120949, Polunin 1934 and 6; opposite Digges Island, Low 1898 (O); Digges Island, Bell 1884 (O); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O) 34716 pars as "*F. ovina* var. *supina*", Mackenzie 1886 (O) 34702 as "*Trisetum subspicatum*"; Mansel Island, Bell (O) 34717. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 196); White Island, Mathiassen 1922 (C); York Bay, Hooper (L, note only), Mathiassen 1922 (C); South Bay, Malte 1928 (O,G,C) 120369 120645 120650, Sutton 1930 (G), Polunin 1934 and 6; Noksaruaq, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: c. Wager Bay, Macoun 1910 (O,N) 79121 as "*F. ovina*"; small island south of Wager Bay, Freuchen 1923 (O,C) 687; Walrus Island near Cape Fullerton, Freuchen 1922 (O,C) 332; Depot Island, Freuchen 1923 (C) 676; Chesterfield, Malte 1928 (O,G,C) 120453 120493 120524, Polunin 1936; Cape Eskimo, Macoun 1910 (O,C) 79118 79119 as "*F. ovina*."

51. *Festuca baffinensis* n. sp.

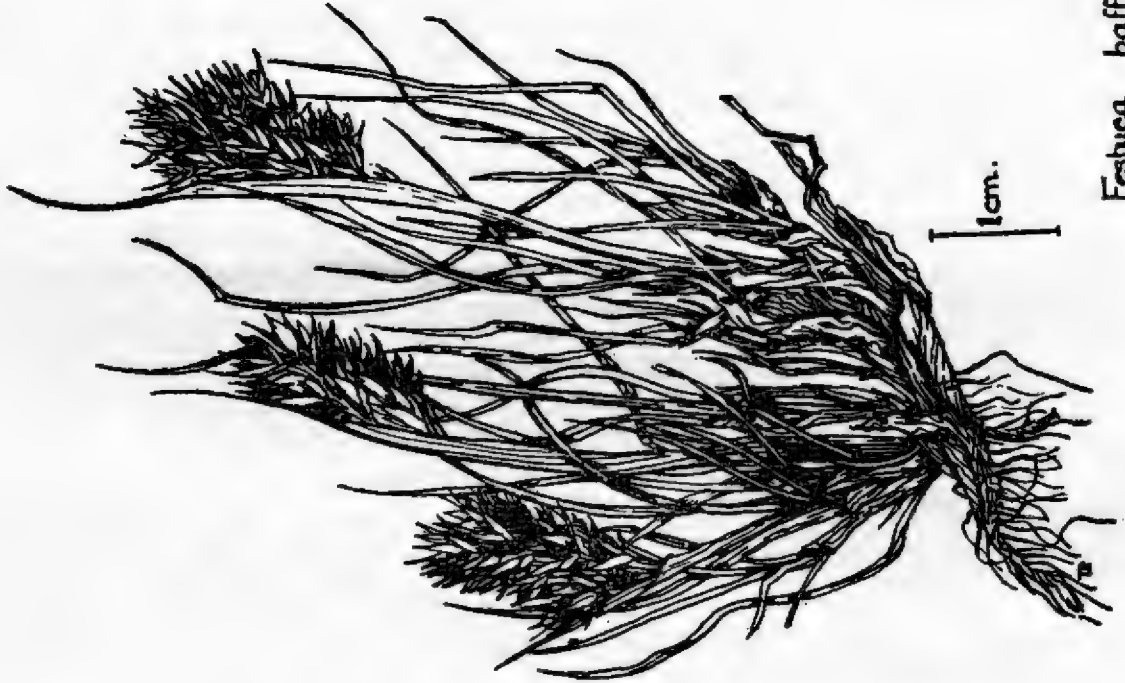
Gramen perenne caespitosum affine *Festucæ brachyphyllæ*, a quo differt panicula latiore et multo caliginosa, stipite robustiore et dense hirsuto, aristis brevioribus præter solitum (plerumque tantum $\frac{1}{3}$ - $\frac{1}{4}$ longis quam lemmata), antheribusque tantum 0.03-0.5 mm. longis. Type in Gray Herbarium, Harvard University, cotypes in National Herbarium of Canada, Ottawa, and in the British Museum, London: *Nicholas Polunin*, Pond Inlet, Baffin Island, No. 706, Sept. 12, 1934. Figures on Plate III.

This plant was first separated on account of its very dense and dark, broadly ovoid panicle, being noted as similar to a form I had seen on the higher peaks of the Rocky Mountains. In these superficial characters it is rather like a specimen in the Gray Herbarium from the summit of Pike's Peak in Colorado (alt. 4,300 metres, coll. A. S. Hitchcock 1913), although emphasizing the above-mentioned characters more strongly. However, it differs from all southern and most other arctic material of the group in

PLATE III



Poa Hartzii
var. *vivipara*



Festuca balfinensis



having the culm, at least on its upper half, very densely tomentose, with short, curved hairs. On the other hand, most material of *F. brachyphylla* that I have examined has the panicle lance-ovate and the axis narrower and more "wiry" above, glabrous or essentially so and rather shiny like the branches of the inflorescence, and more or less scabrous with upwardly curved, whitish teeth. Thus also is the type specimen of Robert Brown's *F. brevifolia*, which is also the type of *F. brachyphylla*, Schultes having merely copied Brown's description, word for word, remarking (1827, p. 647) "Nomen mutandum ob antiquiorem *F. brevifoliam* Mühlenb."

But still our plant would seem distinguishable only as a variety of *F. brachyphylla*, to which it is connected by less extreme forms occurring in other parts of Arctic America and also in Spitsbergen¹, were it not for the anthers. These in *F. brachyphylla* are "0.6-1 (1.4) mm." long (Scholander 1934, p. 70), and although they are sometimes stated to be as little as 0.5 mm. in length I have not been able to find any so short. However, in all my material of *F. baffinensis*, stretching over its known range of more than 2,000 kilometres, the anthers are subglobose and still shorter, being only 0.3-0.5 mm. long, which can leave little room for doubt that this constitutes a distinct species.

General Distribution. Eastern Arctic America, stretching from the north coast of Ellesmere southwards through intermediate portions of the Arctic Archipelago to the south coast of Baffin. Northernmost record Floeberg Beach, 82° 27' N. on the north coast of Ellesmere (coll. Capt. H. W. Feilden 1876, specimens in Kew and British Museum Herbaria).

E. Arctic Distribution. Same as general distribution, the species being apparently limited to our area—See above.

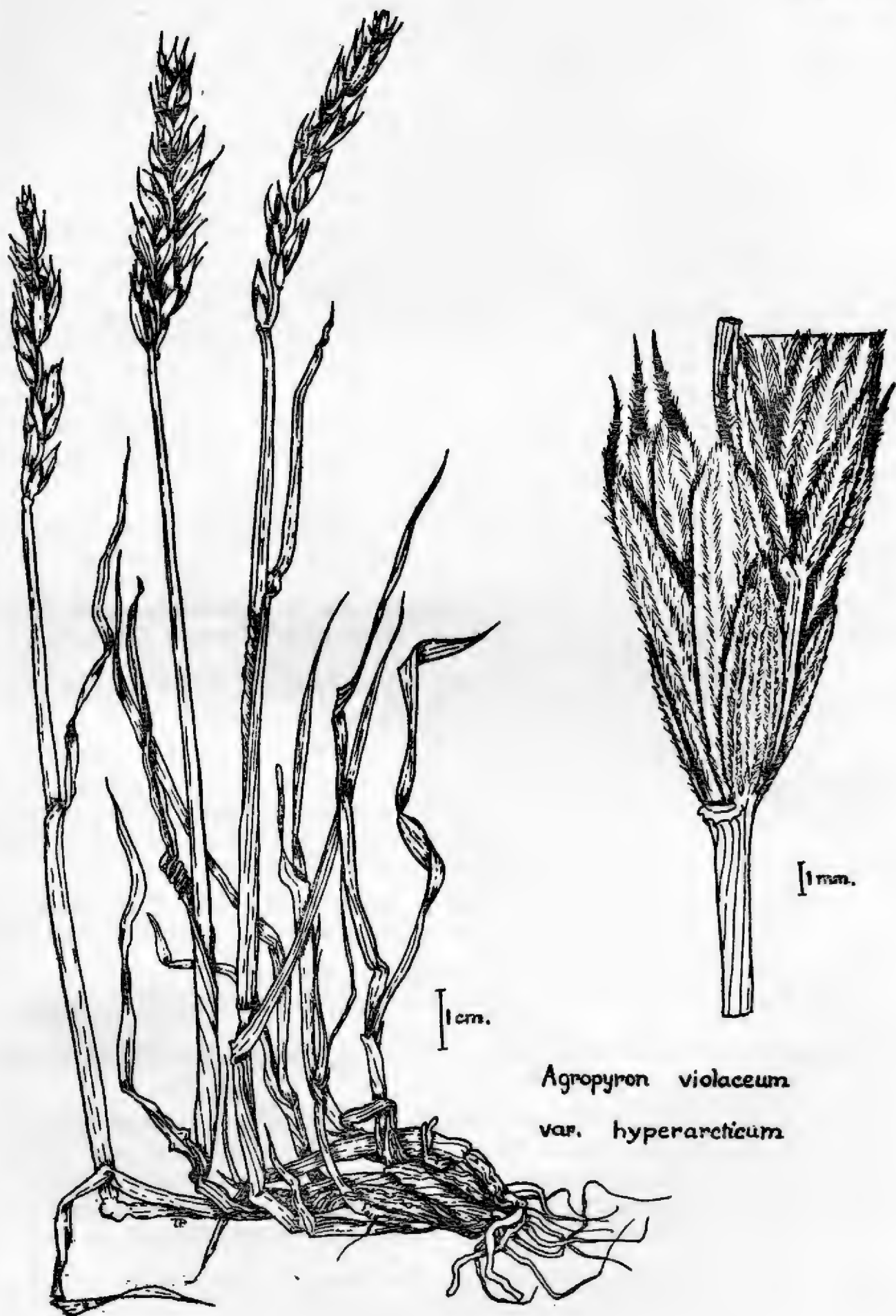
Occurrence. Rather uncommon in its few localities. Noticeable because of its dense and ultimately very dark brown-purple or almost black panicles. It seems to be more markedly gregarious than *F. brachyphylla*, and to be absent from most of the unfavourable habitats of that species, growing chiefly on fairly damp and open, gravelly areas.

1. ELLESMERE: o. North Coast, Floeberg Beach, Feilden 1876 (K,B); Discovery Harbour, Hart (B) as "*F. ovina* var. *brevifolia*". South Coast, Craig Harbour, Polunin 1936 No. 2478.
3. N. BAFFIN: r? Pond Inlet, Polunin 1934 Nos. 650 705 706.
5. S. BAFFIN: l. Cape Dorset, Polunin 1934 and 6 Nos. 318 320 2552.

52. *Agropyron violaceum* (Hornem.) Lange, Conspectus Florae Groenlandicae 1, p. 155 (1880).

My one collection of *Agropyron* from the Arctic Islands seems to belong to this species rather than to *A. latiglume* (Scribn. and Smith) Rydberg. Thus it compares well with the figure in Flora Danica (XII, tab. mmxlv, 1834) of Hornemann's original *Triticum violaceum*, except that it has lower and stouter culms and excessively hairy glumes as well as

¹ Examples in the Gray Herbarium: leg. Ekblaw 1914 "Hayes Harbor, lat. 78° 15' N. in the region of Etah," northwest Greenland, and leg. Dutilly "Letty Harbour, lat. 70°, N.W.T". Also leg. Ekstam "Advent Bay, Isfjord 1897" (Spitsbergen). Indeed these hairy forms of *F. brachyphylla* seem to occur around the world at high latitudes, with the result that this species is not infrequently described as having the culms somewhat pubescent (e.g., by Sørensen 1933, p. 138).



lemmas. Moreover, my material was found at Arctic Bay, lat. $73^{\circ} 5' N.$ in northern Baffin, to whose flora the genus is new. The plants grew luxuriantly enough, although only about 25 cm. high in the two patches that I saw. This is admittedly far to the south of, but still in the same general region as, Greely's famed collection of the species at Discovery Harbour in northern Ellesmere, which is the only other definite claim for our area. Concerning this claim I can only quote Scribner and Smith (1897, p. 30) who, in setting up their var. *latiglume* of *A. violaceum* (which variety is the type of *A. latiglume* as it is now called), wrote "The typical or European form of this species is represented in the National Herbarium by specimens from Grinnell Land, collected by Gen. A. W. Greely in 1883." This leaves me with little doubt in the first place that Greely's record is to be upheld (as already advocated by Simmons in both his publications dealing with our region), and in the second place that my plant from Arctic Bay is the same as Greely's, and belongs to *A. violaceum* and not to *A. latiglume* as implied by Fernald (1933, p. 169). However, it differs from typical *A. violaceum* in the characters mentioned above, and so I venture in spite of the intricacy of the group to propose it as

var. *hyperarcticum* n. var.

Culmis humilioribus robustioribusque quam in forma typica, numquam plus quam 35 cm. altis, et glumis et lemmatis nimis pilosis. Type in British Museum, cotypes in Gray Herbarium and National Herbarium of Canada: *Nicholas Polunin*, Arctic Bay, Baffin Island, No. 2531, Sept. 9, 1936. Figures on Plate IV.

This from all accounts would appear to be the same as the plant recently reported from northeast Greenland (by Sørensen 1933, p. 133, and Gelting 1934, p. 182) as var. *latiglume*, to which, however, as should be clear from what has been said above, it cannot be referred. It seems to represent a rather well marked high-arctic variety which, even if it has rarely been collected, is apparently widespread on calcareous areas in northern Baffin, Ellesmere, and Greenland. On the other hand, material from Churchill slightly to the south of our area on the west coast of Hudson Bay seems properly referable to *A. latiglume*. Somewhat more reminiscent of this, too, but unusually smooth-looking, and darker and more slender about the spike, was a plant seen growing on a closed grassy bank some miles inland from Cape Wolstenholme, on the south shore of Hudson Strait. It was also a little reminiscent of *A. repens*, although this was land practically untrodden by white men; but in any case we cannot count it as a definite record.

General Distribution. *A. violaceum* sensu lat. circumpolar (sensu str. possibly circumpolar ?), chiefly arctic and subarctic, reaching a latitude of $74^{\circ} 5' N.$ in East Greenland and of $81^{\circ} 43' N.$ at Discovery Harbour in Ellesmere, where it has its northernmost station (Greely 1888, II, p. 15, sub nom. *Agropyrum dasystachyum* var. *violaceum*).

E. Arctic Distribution. ?Possibly very widespread, but as yet found only in northern Ellesmere, northern Baffin, and very doubtfully in northernmost Quebec.

Occurrence. With little doubt very rare, as it is too conspicuous to be often overlooked. My Arctic Bay collections grew: (1) on and around the mounded sides of a ruined igloo, where the tightly packed, clayey earth was highly calcareous and otherwise largely barren (cf. also Gelting 1934, p. 183); and (2) on the similar habitat afforded by a finely comminuted, clayey solifluction bank well away from the one-time settlement.

1. ELLESMERE: r. *Lady Franklin Bay*, Discovery Harbour, Greely 1883 (W*).
3. N. BAFFIN: r. Arctic Bay, Polunin 1936 Nos. 2531 2532 var. *hyperarcticum*.
(N. QUEBEC: ? Wolstenholme, seen growing by Polunin, 1936.)

53. *Elymus arenarius* L., Sp. Pl. ed. 1, p. 83 (1753).

The typical form of this familiar species appears to be absent from the New World, most of my material belonging instead to the usual widespread American

var. *villosus* E. Meyer, Pl. Labrador, p. 20 (1830).

This varies considerably at different latitudes, the most marked tendency being towards a low, soft, villous form, which occupies all the northernmost localities, and which here, in its extreme development, is so strikingly distinct that it has generally been considered a separate species and called *E. mollis* Trin. However, this last, described from Kamtchatka and the Aleutian Islands, is apparently identical with *E. arenarius* var. *villosus* (cf. St. John 1915, p. 99), which was originally described from Labrador; and even as we have this apparent conformity in the variety occurring in north-temperate and subarctic regions on the two sides of the continent, so, farther north in the Arctic, we have a single reduced form stretching across the continent. This was described by Scribner (1899, p. 326) as *Elymus villosissimus* from "Uplands, St. Paul Island, Bering Sea" and "also Wrangell Island, Arctic America", and has been taken up by Hultén, who remarks (1927, p. 157) that in Kamtchatka it is "an inland plant growing in the mountains", that "it must be admitted that the characteristics distinguishing it from *E. arenarius* subsp. *mollis* are not very prominent", and that "some forms combine the two species".

There is in the Gray Herbarium a specimen labelled "16626 *Elymus villosissimus*, Scribn. St. Paul Island, Jas. M. Macoun, August 4th 1897" which it seems fairly safe to accept as a cotype of the species,¹ even if the legend given by Scribner in his original description reads "16226 July, August". My material from the farthest north stations in the Eastern Arctic, except that it tends to be still more diminutive, with a still shorter and broader, soft-textured spike, agrees perfectly with this specimen of Macoun's and with Scribner's description and figure of his *E. villosissimus*. This, as has been remarked above, is very distinct in the north but, grading everywhere farther south by imperceptible degrees into the southern variety of *E. arenarius*, cannot be maintained as a separate species, but merely as the geographically well segregable

var. *villosissimus* (Scribner) *n. comb.*

¹ It may be remarked that Scribner and Merrill (1910, p. 90) mention "*E. mollis*" as "The common grass in sands along the coast . . . southward to Oregon" and record it from St. Paul Island as well as *E. villosissimus*.

(*Elymus villosissimus* Scribner in U. S. Dept. of Agriculture, Div. of Agrostology, Bull No. 17, p. 326 (1899).)

Scribner and Merrill (1910, p. 88) give in their key to the Alaskan species of *Elymus* "Spike less than 8 cm. in length — *E. villosissimus*; Spike exceeding 10 cm. in length — *E. mollis*", i.e., *E. arenarius* var. *villosus*. One might add: culms less than 40 cm. high — var. *villosissimus*; culms more than 40 cm. high — var. *villosus*; or, for more reliable characters: glumes soft, densely long-villous, some at least broadly lanceolate, acute but not acuminate, 8-14 mm. long — var. *villosissimus*; glumes stiff, with hard, often long-acuminate tips, more or less villous, narrowly lanceolate, generally more than 2 cm. long — var. *villosus*.

Apart from its more southern occurrence on mountains, where alone in Kamtchatka and the Aleutians it can find conditions more or less comparable with those of the Arctic, var. *villosissimus* appears to occupy a belt to the north of var. *villosus* across the extreme north of America and extending into eastern Asia. For besides those from the Bering Sea region and our own area, I have seen typical specimens from intermediate parts of North America and from Siberia (Cape Wankerin, leg. J. Muir 1881). I have not seen any var. *villosissimus* from Greenland. Within our area var. *villosissimus* occurs typically in Melville Peninsula and northern Baffin, and also in places in Cumberland Gulf and on the north shore of Hudson Strait, although here much of the material is transitional to var. *villosus*. Var. *villosissimus* in full development seems to be absent from the mainland of Quebec and the west coast of Hudson Bay south of Repulse Bay, the species being represented in most of these places by intermediate forms, or, in the southernmost localities, by more or less typical var. *villosus*.

General Distribution. The whole species circumpolar. Fairly high as well as low latitudes, but not reaching the northernmost coasts of the world, the farthest north locality being apparently Pond Inlet, 72° 43' N. in Baffin, where it has been taken by several collectors (See below).

E. Arctic Distribution. Probably almost complete around shores (at least where these are not too rocky) in the southern half of our area, or anyhow as far north as the Arctic Circle, but rare in northern Baffin and not recorded north of Lancaster Sound.

Occurrence. On sandy sea-shores just above high-water mark of spring-tides, or sometimes in the extreme south stretching back a few hundred metres from the shore. Markedly gregarious, and ecologically important in dominating (or often forming almost exclusively) a characteristic shore community; also in binding sands and forming miniature dunes—even at Pond Inlet, its northernmost known locality. The largest of these dunes at Pond Inlet are about 1 m. high, the "Lyme Grass" forming a closely matted carpet from which arise axes only 10-20 cm. high (var. *villosissimus*). In the extreme south of our area the var. *villosus* sometimes attains a height of 70 cm.; to this variety the following records more nearly refer, unless otherwise stated.

3. N. BAFFIN: r. Pond Inlet, all var. *villosissimus*, Soper 1923 (O) 111369 as "E. mollis", Mathiassen 1923 (C) 778, Freuchen 1924 (O,C) 898, Joy 1924 (O), Polunin 1934, Bazin 1935 (O,M). Admiralty Inlet, Saputit, Mathiassen 1922 (C) 110 var. *villosissimus*.

4. C. BAFFIN: o. *Cumberland Gulf* (Tarr ex Rowlee and Wiegand 1897, p. 418); Kingnait, Taylor 1860 (O,K,B); Pangnirtung, Malte 1927 (O,G) 118360 var. *villosissimus*, Polunin 1934 and 6 apprg. var. *villosissimus*.
5. S. BAFFIN: l. *Frobisher Bay*, Sewall 1927 (G) 233 var. *villosissimus* as "E. mollis". *South Coast*, Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Robinson 1922 (G) 58 var. *villosissimus*, Soper 1926 (O), Malte 1928 (O,G,C) 120403 var. *villosissimus*, Polunin 1934 and 6 intermediate and var. *villosissimus*.
6. MELVILLE PENINSULA: f. *South of Usugarsuk*, Mathiassen 1922 (C) 107 var. *villosissimus*; *Five Hawser Bay*, Parry (K,B) var. *villosissimus*; *Danish Island*, Freuchen 1922 (C) 15 apprg. var. *villosissimus*; *Repulse Bay*, Parry 1821 (C) var. *villosissimus*, Edwards (K,B) var. *villosissimus* as "E. mollis", Mathiassen (C) 433 var. *villosissimus*.
7. N. LABRADOR: o. *Chidley Peninsula*, MacGregor 1905 (K); Burwell, Hantzsch 1906 (D*), Porsild 1930 (O*), Polunin 1936; Bowdoin Harbour, Potter and Brierly 1934 (G) as "E. arenarius var. mollis".
8. N. QUEBEC: c. *Diana Bay*, Knapp 1936; *Cape Wales*, Bell (O); *Stupart Bay*, Payne 1886 (T); *Wakeham Bay*, Malte 1927 and 8 (O,G), Johansen, 1927 (C) 1152 apprg. var. *villosissimus*, Polunin 1936 apprg. var. *villosissimus*; *Sugluk*, Malte 1933 (O), Polunin 1936; *Wolstenholme*, Malte 1928 (O,G,C) 120931 apprg. var. *villosissimus*, Polunin 1934 and 6 apprg. var. *villosissimus*; near *Ice Harbour*, Low 1898 (O) as "E. mollis".
9. ISLANDS IN HUDSON, ETC., BAYS: c. *Akpatok Island*, Polunin 1931 (B); *Nottingham Island*, Bell 1884 (O) var. *villosissimus*; *Salisbury Island*, Buchan 1938 apprg. var. *villosissimus*. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 196, sub nom. *Elymus arenarius*); northeast coast, Mathiassen 1922 (C) 461 apprg. var. *villosissimus*; *York Bay* (Parry ex Hooker 1825, p. 409), Mathiassen 1922 (C); *South Bay*, Malte 1928 (O,G,C) 120571 apprg. var. *villosissimus*, Sutton 1930 (G) apprg. var. *villosissimus*, Polunin 1934 apprg. var. *villosissimus*, Manning 1934 apprg. var. *villosissimus*; *Bear Island*, Sutton 1930 (G) apprg. var. *villosissimus*; *Coats Island*, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: c. *Island south of Wager Bay*, Freuchen 1923 (O,C) 643 apprg. var. *villosissimus*; *Chesterfield*, Tyrrell 1893 (O), and five others (O,G,C) all apprg. var. *villosissimus*; *Rankin Inlet*, Macoun 1910 (O,C); *Cape Eskimo*, Birket-Smith 1923 (C).

CYPERACEAE

54. ***Eriophorum Scheuchzeri*** Hoppe, Bot. Taschenb., p. 104 (1800).
E. capitatum Host

This species varies so much in the length of the anthers and the width of the white margin to the involucreal scales that it is sometimes difficult to distinguish from specimens of the generally more slender *E. Chamissonis* f. *albidum*; indeed some specimens in our area seem to occupy a position intermediate between the two species. The colour of the scales is an entirely unreliable character, for much of the otherwise good *E. Scheuchzeri* (fide Fernald) within our area has scales with broad white margins; also the shape of the head is apt to be misleading, for it, and indeed the whole appearance of the pappus, may become changed after some days of exposure to wind, rain, and snow. Generally, however, the species are easily separated on the character of the anthers, some of which are almost always to be found caught in the pappus, even in quite late fruiting stages. Thus Fernald (1905, p. 82) gives the length of the

anther as 1 mm. in *E. Scheuchzeri* and 1.5-3 mm. in *E. Chamissonis*, and this allows us to separate the vast majority of specimens; but still there remain some that are intermediate, having anthers 1.2-1.5 mm. long and seeming to unite the species or to indicate that they hybridize in our area.

General Distribution. Circumpolar, all over the Arctic, and generally the chief member of the genus in the Far North. Northernmost record "towards Cape May" in Sommerdalen, c. 82° 28' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 230).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Common in most districts around the margins of fresh-water pools, in shallow water, and especially on wet mud and silt; also in the more poorly vegetated marshes and in brackish areas near the sea. In any of these situations it may form a luxuriant stand from 10 to 40 cm. high, locally dominating the area in some places without the intervention of any other phanerogam. In such circumstances, beside a quiet pool in a dark and barren, rocky ravine, its spherical white heads standing gracefully apart, and each on a perfectly erect axis, it can seem the most beautiful living thing in the whole Arctic, or perhaps in the world.

1. ELLESMERE: c. About thirty records (incl. as "*E. vaginatum*") from almost all parts except the north coast (cf. Simmons 1906, p. 150), e.g., Discovery Bay, Hart (B), Skräling Island, Simmons 1899 (C), Deserted Village, Hart 1875 (B), Bache Peninsula, Malte 1927 (O,G,C), Fram Harbour, Simmons 1899 (G,N,K,B,C), Craig Harbour, Soper 1923 (O,C).
2. DEVON, ETC., ISLANDS: f. *Devon Island*, Dundas Harbour, Malte 1927 (O,C), Polunin 1934 and 6; Powell Creek, Lyall 1852 (K). "*Somerset Island*, Port Kennedy" (Walker ex Hooker 1861, p. 85).
3. N. BAFFIN: f? Pond Inlet, Polunin 1934 and 6; Arctic Bay, Polunin 1936.
4. C. BAFFIN: c. "Cape Adair, Scotts Bay, Cape Searle" (Taylor 1863, p. 331); Clyde, Polunin 1934 and 6. *Cumberland Gulf*, Kumlien 1878 (G,N), Taylor 1862 (K); Pangnirtung, Turner 1934 (K), Polunin 1934 and 6; Kekerten, Taylor 1860 (K); "Kingua" (Boas ex Ambronn 1890, p. 98); Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: c. "Signuia" (Schuchert and White ex Holm 1900, p. 67). *Frobisher Bay*, Palmer 1929 (G); Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Johansen 1927 (C), Polunin 1936; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 419); Amadjuak Bay, Soper 1926 (O); between Amadjuak and Tchark-bach Fiords, Bell 1897 (O); Cape Dorset, Burwash 1924 (O), Soper 1926 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. "*Interior*" (Rae 1850, p. 215); Igloolik, Parry (B,S*). *Vansittart Island*, Freuchen 1922 (N,C); Danish Island, Freuchen 1922 (O,C), Bangsted 1923 (C*); Georgina Island, Freuchen 1922 (C); Repulse Bay, Hooper 1821 (L), Olsen 1922 (O,C *pars* with *E. spissum*) 365.
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K, *p. min.*) as "*E. vaginatum*.... 'supper'—used to make fire with sparks from Iron Pyrites. (W. MacGregor)"; Burwell, Hantzsch 1906 (D*), Malte 1927 (O,G,C), Johansen 1927 (C), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G); Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. Wakeham Bay, Malte 1933 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Johansen 1927 (C), Polunin 1934 and 6; Cape Smith, Polunin 1936.

9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Johansen 1927 (C); Mansel Island, Bell 1884 (O) 34721 as "*E. vaginatum*," Leechman 1936. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 195); York Bay, Parry 1821 (C), Hooper 1821 (L, note only), Mathiassen 1922 (C); South Bay, Sutton 1930 (G); Walrus Island, Baird 1936; Cape Low, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Whale Point, Comer 1894 (O,K); Chesterfield, anon. 1792 (B), Freuchen 1923 (N,K,C), Malte 1928 (O,G,C), Polunin 1936; Rankin Inlet, Macoun 1910 (O,N,C) 79223.

55. ***Eriophorum Chamissonis*** C. A. Meyer apud Ledeb., Fl. Alt. I, p. 70 (1829).

E. russeolum Fries

The bristles in all my material of this species, which has not previously been recorded from within the area, are white or pale cinnamon coloured, thus approximating to

f. **albidum** (F. Nyl.) Fernald in *Rhodora* XXIII, p. 131 (1921).

Although some of the specimens are distinctly rufous, it must be the general similarity to the familiar *E. Scheuchzeri* that has led to *E. Chamissonis* being so overlooked before. Moreover, as has been mentioned above, the two species although generally quite distinct seem to run together (hybridize?) in our area, some specimens being intermediate even in the length of the anthers—a character that elsewhere generally allows them to be separated immediately. Among these intermediates must be mentioned my No. 2561 from Arctic Bay, which has the anthers only 1.3 mm. long but otherwise is almost typical *E. Chamissonis*, being tall and slender and having the head obovoid and slightly rufous, and the pappus silky. Other specimens from Arctic Bay, which lies at about the same latitude as the northernmost known station of the species on Novaya Zemlya where it was discovered by Prof. Lynge, have the appearance of *E. Scheuchzeri* but anthers up to 1.7 mm. long, which would put them in *E. Chamissonis*. These we will, however, exclude from our records as atypical and thus uncertain.

General Distribution. Circumpolar? Chiefly in subarctic and low-arctic regions, but now being detected farther north. Northernmost record Pomorskaya, c. 73° 10' N. in Novaya Zemlya (Lynge 1923, p. 98).

E. Arctic Distribution. Fairly widespread in the south; also reaching northern Baffin. New to the entire American Arctic Archipelago.

Occurrence. Apparently rather rare, or else extensively overlooked. It prefers deep luxuriant marshes or the mossy margins of sheltered pools to the more open and muddy habitats of *E. Scheuchzeri*. Such suitable "mosses" become rarer as we go northwards; but already in the south of our area *E. Chamissonis* appeared to be extremely local and so occasional as to have little effect upon the vegetation. All f. *albidum*:

3. N. BAFFIN: r. Pond Inlet, Polunin 1934 *vide* Fernald; (Arctic Bay, Polunin 1936 atypical—See above).
(C. BAFFIN: ? Clyde, Polunin 1936 No. 2599 apprg. *E. Scheuchzeri*; Nettilling Lake Soper 1925 (O) 125686 apprg. *E. Scheuchzeri*.)

5. S. BAFFIN: r. Inland of Lake Harbour, Polunin 1936 incl. 1172 1183 apprg. *E. Scheuchzeri*.

(ISLANDS IN HUDSON, ETC., BAYS: ? *Southampton Island*, South Bay, Polunin 1936, doubtful specimen.)

10. W. COAST HUDSON BAY: r. *Chesterfield*, Polunin 1936.

56. ***Eriophorum spissum*** Fernald in *Rhodora* XXVII, p. 208 (1925).

E. vaginatum of authors, not L.

E. callitrix of Gray's Manual and most Am. auth., not Cham.

This plant, which has passed for decades as *Eriophorum callitrix* in Gray's Manual and with its legion of followers, is, however, perfectly distinct. As is best seen when it is growing in company with true *E. callitrix*, the present species forms much larger and coarser tussocks, has the spathes and scales greenish or lead-coloured with lighter margins (instead of blackish all over as in *E. callitrix*), and has the pappus dull instead of beautifully shining, silky white. In *E. callitrix* the pappus is, moreover, kept more erect by the stiffer scales.

Like other *Eriophora*, *E. spissum* in our area changes greatly in appearance from one stage of its summer's growth to another, but I have not been able to find any significant variations.

General Distribution. Apparently confined to eastern and central North America, where it extends from "southern New England, mountains of Pennsylvania, northern Indiana and Wisconsin" (Fernald 1925c, pp. 209, 210) northwards into our area, having its northernmost station at Arctic Bay, lat. 73° 5' N. in northern Baffin (Polunin 1936, field notes).

E. Arctic Distribution. Probably almost complete in the extreme south and fairly general to the Arctic Circle; also extending therefrom for several hundred miles to northern Baffin, where it has two known stations. With little doubt absent from the extreme north.

Occurrence. Fairly common in marshy areas in the extreme south, and sometimes locally abundant to codominant. It grows in big, close "niggerhead" tussocks rising 10-20 cm. above the surface of the ground. From this rise numerous culms for generally another 20 cm.

3. N. BAFFIN: o. Pond Inlet and near, Freuchen 1923 (O,K,C), Malte 1927 (O,G,C), Polunin 1934 and 6, Bazin 1935 (O,M); Arctic Bay, Polunin 1936.

4. C. BAFFIN: f. *Cumberland Gulf*, American Harbour, Kumlien 1878 (G,N) 981¹; Pangnirtung, Soper 1924 (O,C), Malte 1927 (O,G,C), Polunin 1934 and 6, Turner 1934 and 6 (K). *West Coast*, Camp Kungovik, Soper 1929 (O).

5. S. BAFFIN: f. Loks Land, Palmer (G, *pars*) as "*E. Scheuchzeri*." *Frobisher Bay*, Sewall, 1927 (G,N,C); Point Brewster, Potter 1937. *South Coast*, Soper (Little Koukdjuak) River, Soper 1931 (O, *pars*) 125745; Lake Harbour and near, Malte 1927 (O,G), Soper 1931 (O), Polunin 1936, rare; Cape Dorset, Robinson 1922 (G, *pars*) 56 as "*E. callitrix*."

6. MELVILLE PENINSULA: f? Repulse Bay, Olsen 1922 (O *pars*, C *pars*) 365 as "*E. Scheuchzeri*."

¹ Recorded by Gray (1879 p. 166) and Simmons (1913, p. 56) as "*Eriophorum vaginatum*", which, however, appears to be absent from our area and indeed from North America except in the Far West.

7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K, p. min.); Cape Chidley, Bell 1884 (O) 34722; Burwell, Malte 1933 (O,G,N), Polunin 1934 and 6.
8. N. QUEBEC: o. ? "Stupart Bay" (Payne ex Lawson 1887, p. 212); Wakeham Bay, Malte 1933 (O,G,N), Polunin 1936; Sugluk, Malte 1933 (O,G), Polunin 1936; River Kovik, Low 1898 (O) 22044.
10. W. COAST HUDSON BAY: r? Chesterfield, Polunin 1936.

57. ***Eriophorum callitrix*** Cham. apud C. A. Meyer in Mém. Sav. Étrang. Acad. St. Pétersbourg I, p. 203 (1830).

Although this beautiful species was previously considered a rarity (cf. Fernald 1925c, p. 205), it now appears to be rather widely distributed (cf. Seidenfaden and Sørensen 1933, map on p. 18). Indeed in some places it is quite common and, when explorers have learned to overlook it less, may even prove to be circumpolar.

It is worthy of note that an intermediate specimen with all the marks of a hybrid between *E. callitrix* and *E. spissum* was found in northern Baffin in 1936 (Polunin No. 2469) at Pond Inlet, where both species occur, and not far from the station of the apparently intermediate *E. Scheuchzeri* and *E. Chamissonis* f. *albidum* mentioned above.

General Distribution. ? Possibly circumpolar, but so far not detected in Europe or western North America except in the Bering Strait region. Chiefly rather low-arctic, but reaching the north side of Kilauea, 77° 40' N. on the east coast of Greenland (Sørensen ex Seidenfaden and Sørensen, 1937, p. 87). This is the northernmost known locality for the species.

E. Arctic Distribution. Fairly general in the extreme south, and in Baffin widespread northwards to the Arctic Circle, but north of this known only from Pond Inlet.

Occurrence. Not rare within most of its limited area, but never common except very locally. Grows in much the same sheltered marshy areas as *E. spissum*, but generally in much smaller numbers, although in one or two places I have seen it locally codominant with other marsh plants. I have not been able to discover any appreciable difference in the ecology of *E. spissum* and *E. callitrix*, which so frequently grow together that many of the earlier collections from within our area have been found to contain both. *E. callitrix* is said to be calcicolous.

3. N. BAFFIN: r. Pond Inlet, Polunin 1934 and 6 incl. 2469 apparent hybrid with *E. spissum*.
4. C. BAFFIN: r. Nettilling Lake, Soper 1925 (O,C); Koukdjuak River, Soper 1925 (O,C) 121303.
5. S. BAFFIN: f. Loks Land, Palmer (G. pars) as "*E. Scheuchzeri*". *Frobisher Bay*, Point Brewster, Potter 1937; Soper (Little Koukdjuak) River, Soper 1931 (O, pars) 125745; Lake Harbour, Malte 1927 and 33 (O,G,N,C), Soper 1931 (O) 125746 as "*E. spissum*," Polunin 1934 and 6, common; Cape Dorset, Robinson 1922 (G, pars) 56.
7. N. LABRADOR: o. Burwell, Borden 1904 (O) 63083 as "*E. vaginatum*," Polunin 1931, 4, and 6.
8. N. QUEBEC: o. Wakeham Bay, Malte 1933 (O,G,N), Polunin 1936; Sugluk, Malte 1933 (O,G), Polunin 1936; Wolstenholme, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r? *Southampton Island*, South Bay, Sutton 1930 (G, pars), Polunin 1936; Nuwoodlik Hills, Baird 1936.
10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936.

58. **Eriophorum angustifolium** Roth, Tent. I, p. 24 (1788).

E. polystachyon of many authors, possibly not L.

I have followed Hultén (1927, p. 159) and some other modern writers in discarding the older name of Linnaeus (1) because it has been such a frequent cause of confusion, (2) because it is a constant source of annoyance in being variously spelled by different authors¹, and (3) because I am not at all sure that my material belongs to the same species as that which Linnaeus was describing as "foliis planis," although it fits perfectly Roth's "foliis canaliculato-triquetris" of his *E. angustifolium*.

The species is very plastic, constituting a veritable *typus polymorphus* within our area. Thus it varies enormously in size and robustness (from less than 10 cm. to more than 70 cm. in height, or a full metre not far to the south), and also in the number, shape, and form of the heads, and in the colour of the involucreal scales, which may be anything from a light silvery grey to almost black. As the characters do not appear to hold good in any one case, I have given up trying to sort the almost endless varietal tendencies; even the var. *elegans* Bab., which has been recorded by Fernald (1905, p. 89) from within our area, seems only doubtfully distinct—probably one of the many responses to varying habitat conditions. Somewhat better marked, but again probably representing a mere reduction phase that appears to be paralleled on high mountains throughout the great range of the species, are features exhibited by some specimens from the central parts of our area (particularly from northern Baffin), which are referable to

var. **alpinum** Gaudin, Fl. Helvet. I, p. 131 (1828).

My specimens match others so named from 1,200 m. in the Vosges.

As we go farther north a still further reduced form becomes more and more prevalent, having very dark scales and producing little or no "cotton," exactly as in Spitsbergen:

var. **triste** Th. Fries in Öfv. af Kongl. Vet.-Akad. Förh. Stockholm XXVI, 2, p. 135 (1869).

I had long thought of this as a mere high-arctic phase, but now am assured by Dr. Thorv. Sørensen that it is a well marked variety in East Greenland—cf. also Sørensen (1933, pp. 127 *et seq.*). However, neither of the above named varieties recognizable in our area is considered fully separable or worth citing individually under "occurrence."

General Distribution. Circumpolar, having also a great range in latitude, including the whole of the Arctic and Subarctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 229).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Common everywhere in marshy and muddy freshwater habitats and around the margins of pools, where it may grow out into the water for a considerable distance if the bottom is suitable for rooting, the

¹ Linné's original spelling (Sp. Pl. ed. 1, p. 52 (1753)) was *polystachion*, but this, the correct name, and "polystachyon", the correct *Greek*, are less frequently used than "polystachyum" and "polystachium".

situation not too exposed, and the water not more than 50 cm. deep. Often forms extensive beds or dominates large areas of marsh, including the gentler sloping sides of valleys, which are thus whitened by the multitudinous heads—as will be seen immediately on any summer visit to Pangnirtung, for example. It is probably the most abundant amphibian within our area, and is altogether very important ecologically. In the Far North it is, however, often less frequent than *E. Scheuchzeri*, and generally much reduced in stature; but it still sometimes reaches 30 cm. in height even in Ellesmere, where it has been recorded more than once from north of lat. 82°.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, mostly var. *triste* and including Shift Rudder Bay, Feilden (K) 17 as "*E. latifolium*." *Hayes Sound*, Feilden 1875 (K) as "*E. gracile*."
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. var. *alpinum*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. var. *alpinum*.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. *Southampton Island*, York Bay, Parry 1821 (C) as "*E. triquetrum*."
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities.

Eriophorum gracile Koch ex Roth is reported by Hooker (in Parry 1825, p. 407) from Southampton Island. However, Simmons (1913, p. 58) was unable to find any specimen to substantiate the record, and came to regard it as probably erroneous, so that it now seems to me we can discard it, as the species has not otherwise been recorded from anywhere near our area, much less so well within it. Probably the specimen referred to was an unusually slender example of *E. angustifolium*, as, to judge from the synonymy, the two species have often been confounded in the past. Indeed many of the older specimens of *E. angustifolium* in the British Museum and Kew Herbarium have been labelled "*E. gracile*" by C. B. Clarke and others.

59. *Scirpus caespitosus*¹ L., Sp. Pl. ed. 1, p. 48 (1753).

All the material from within our area has the orifice of the upper sheath "short" and with a firm border, and the spikelets short and few-flowered, and so belongs not to the European lowland head form but to the wide ranging "arctic-alpine"

var. *callosus* Bigel., Fl. Bost. ed. 2, p. 21 (1824).

(*Scirpus caespitosus* L. var. *austriacus* (Palla) Aschers and Graebn.)

¹ Originally published as *caespitosus*, which is perfectly correct Latin, but it seems better to conform to popular usage and avoid further confusion by spelling it as above (cf. also *Deschampsia* and *Saxifraga*).

This in our area varies considerably in size and luxuriance, being anywhere from 4 to 15 cm. high according to the local habitat conditions, but it does not seem to vary significantly in any taxonomically important character.

General Distribution. The variety circumboreal, chiefly alpine and subarctic. Appears to have its northernmost limit at $72^{\circ} 27' N.$ in East Greenland (cf. Porsild 1920, p. 48).

E. Arctic Distribution. Apparently limited to the mainland of Quebec in the extreme south, where it is fairly widespread, and to two stations in southern Baffin, which are the first records for the entire Arctic Archipelago.

Occurrence. Common in moist depressions in its few stations, and in the most suitable deep boggy habitats sometimes abundant or locally dominant. The characteristic tussocks are, however, much smaller than in the south, and the culms generally only 6-10 cm. high. All var. *callosus*:

5. S. BAFFIN: 1. *Frobisher Bay*, Sewall 1927 (G,K). *South Coast*, Lake Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6.
8. N. QUEBEC: o. *Wakeham Bay*, Malte 1933 (O,G,N), Polunin 1936; Sugluk, Malte 1933 (O,G,N), Polunin 1936; *Cape Smith*, Malte 1928 (O,G), Polunin 1936.

60. ***Eleocharis* (*Heleocharis*) *acicularis* (L.) R. and S., Syst. II, p. 154 (1817).**

Scirpus acicularis L.

This most attractive little plant had never been found within or indeed anywhere near our area until it was discovered early in the course of the Canadian Eastern Arctic Expedition of 1936 growing in southern Baffin Island, submersed on the beds of small freshwater ponds in marshy lowland areas a few miles inland from Lake Harbour. Subsequently I found it again during the same expedition on both sides of Hudson Bay. In the case of the Chesterfield collection, the pond in which it had obviously been submersed earlier in the summer had found an outlet for its water and dried up completely; the plants were here flowering profusely and seem referable to the typical form (cf. Svensen 1929, p. 183). However, all the other plants found within our area were submersed and entirely sterile, as is usually (but not always) the case in Greenland and elsewhere towards the northern limit of the species; they scarcely seem varietally distinct, but may be styled:

f. ***submersa*** (Hj. Nilss.) Norman in Christ. Vidensk.-Selsk. Forh. No. 16 (1893), p. 43 (1894).

General Distribution. The species circumboreal; also in the southern hemisphere. Occurs chiefly south of the Arctic Circle and never at high latitudes, having its northernmost confirmed record at $71^{\circ} 42' N.$ in West Greenland (Porsild 1920, p. 48). However, from Gelting's description (1934, p. 182) of a plant he saw at lat. $73^{\circ} 49' N.$ in East Greenland, I think there can be very little doubt that this was indeed *Eleocharis acicularis*, whose range would thus be extended considerably to the north.

E. Arctic Distribution. Fairly widespread in the extreme south, but northwards known only to latitude 63° 20' N., and hardly to be expected north of the Arctic Circle. The occurrence in Baffin adds a new species (and genus) to the known flora of the Canadian Arctic Archipelago.

Occurrence. Previously overlooked because of its diminutiveness and inaccessibility, but apparently rather rare, or at least very local. Grows in quiet freshwater pools, often where the water is a metre or more deep, forming a bright green, moss-like carpet on the bed where this is sufficiently muddy.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936 f. *submersa*.
8. N. QUEBEC: r. Cape Smith, Polunin 1936 f. *submersa*.
10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936.

61. **Kobresia** (*Cobresia*) **Bellardi** (All.) Degland apud Loisel., Fl. Gall. II, p. 626 (1807).

K. scirpina Willd.

Elyna Bellardi (All.) Hartm.

Elyna spicata Schrad.

Carex of authors

Except for local variations in luxuriance, this plant appears to be much the same throughout our area.

General Distribution. Circumpolar; alpine and arctic, reaching very far north in places. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 229).

E. Arctic Distribution. Fairly general in most districts, and may perhaps in time prove to be almost complete on ice-free land, although it has not yet been recorded from several considerable areas.

Occurrence. Common in most places that I have seen, but so remarkably overlooked (partly due to its similarity to *Carex nardina*—cf. Simmons 1906, p. 148) that there were very few records until recently. Indeed Greely, Simmons, Malte, and I seem to be the only ones ever to have recognized it in the Eastern Arctic, and it must here be recorded as new to the flora of Baffin, despite the fact that it is common almost all over that great land-mass. It grows chiefly on rather dry and exposed, gravelly ridges and hillsides, preferring open habitats. Here its tussocks, which are generally about 10 (5-18) cm. high but individually quite narrow, may be so abundant as locally to dominate the poor vegetation and form a characteristic light-coloured "heath" as in Greenland, although more often in our area the *Kobresia* takes a place secondary in importance to various xerophytic species of *Carex* or *Luzula*.

1. ELLESMERE: c? Discovery Harbour, Hart (K) 65 as "*Carex nardina*", Greely (1888, p. 15). "*Hayes Sound*" (Simmons 1906, p. 149). *South Coast*, many localities (cf. Simmons 1906, p. 149), e.g., Fram Fiord, Simmons 1899 (K) 1664, Harbour Fiord, Simmons 1900 and 02 (G,N,C) 2236 2539 3995.
2. DEVON, ETC., ISLANDS: f? Dundas Harbour, Malte 1927 (O,G,C) 118659 118667, Polunin 1934 and 6.

3. N. BAFFIN: c? Pond Inlet, Malte 1927 (O,G,C) 118662 118663, Polunin 1934 and 6; Arctic Bay, Malte 1927 (O,G,C) 118660 118665 118666, Polunin 1936.
4. C. BAFFIN: f? Pangnirtung, Malte 1927 (O,G) 118661, Polunin 1934 and 6.
5. S. BAFFIN: o. Lake Harbour, Polunin 1936.
7. N. LABRADOR: r? Burwell, Polunin 1936.
8. N. QUEBEC: f? Wakeham Bay, Polunin 1936; Sugluk, Malte 1933 (O,G,N) 126970, Polunin 1936; Wolstenholme, Polunin 1934 and 6.
9. ISLANDS IN HUDSON, ETC., BAYS: r? *Southampton Island*, South Bay, Polunin 1934.

62. ***Kobresia* (*Cobresia*) *simpliciuscula*** (Wahlenb.) Mackenzie in Bull. Torrey Bot. Club L, p. 349 (1923).

K. caricina Willd.

K. bipartita Dalla Torre

Elyna caricina Mert. and Koch

Carex of authors

Of the many names that have been applied to this plant, *Kobresia simpliciuscula* seems to be the one that should be used, as it contains the oldest valid specific epithet (cf. Mackenzie 1923, pp. 348-9).

General Distribution. Circumpolar; alpine and arctic, but not generally ranging so far north as the last species. Northernmost record Mimerdalen in Billen Bay, 78° 39' N. in Spitsbergen (Lid 1925, p. 316).

E. Arctic Distribution. General, and perhaps almost complete on ice-free land, but not yet recorded from northern Ellesmere, central Baffin, or Melville Peninsula.

Occurrence. Preferring less dry and exposed places than the last species, and often growing in quite damp meadows among grasses, etc. Less gregarious and less important, but rarely absent for any considerable distance; grows most frequently about 12 cm. high but sometimes exceeds 25 cm. or, in unfavourable situations, may be reduced to 4 cm. Markedly but not I think obligately calciphilous. Like the last species it is often badly smutted. Has been even more astonishingly overlooked—Simmons' (1906, p. 148, and cf. 1913, p. 59) records from southern Ellesmere being the first from arctic America and, until Dr. Malte collected it at Lake Harbour in 1927, the only ones from our area. Even now only three of the many who have worked within the Eastern Arctic have noted or collected it, although it is widespread and fairly common, occurs in a considerable range of habitats, and is not by any means one of the smallest of the plants with which we have to deal.

1. ELLESMERE: 1. *South Coast*, Harbour Fiord, Simmons 1900 and 02 (N,K,C) 3994, etc.
2. DEVON, ETC., ISLANDS: o? Dundas Harbour, Polunin 1934 and 6.
3. N. BAFFIN: o. Pond Inlet, Polunin 1934; Arctic Bay, Polunin 1936.
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter, 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C) 118557 118664 120282, Polunin 1934 and 6; Cape Dorset, Polunin 1934.
7. N. LABRADOR: r? Burwell, Polunin 1936.

8. N. QUEBEC: f. Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Malte 1928 (O,G) 120658, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: 1? Chesterfield, Sutton 1930 (G, *pars* with *Carex atrofusca*), Polunin 1936.

63. ***Carex nardina*** E. Fries, Nov. Fl. Suec. Mant. II, p. 55 (1839).

With regard to the separability from this species of *C. Hepburnii* Boott (which was published in the same year but 5 months later), Gelting (1934, p. 167), Scholander (1934, p. 58), and others maintain that these are mere phases of the same species, the differences being due to local conditions. However, although I agree that the differences between the two are insufficient for specific segregation¹, especially in view of the frequent occurrence of specimens showing intermediate characters, I prefer to follow Ostenfeld (1923, p. 164) and Kükenthal (1909, p. 70) in retaining the *Hepburnii* element as a variety of *C. nardina*. For whereas typical *C. nardina* occurs apparently throughout our area, var. *Hepburnii* seems to be almost limited to the western mainland, or to adjacent areas (such as Southampton Island and northwest Baffin), which in other ways as well show "western" relationships. This is, moreover, in accordance with the fact that *Hepburnii* was described from the Rocky Mountains and is by Kükenthal stated to be confined to western North America, thus being absent, at least in full development, from Scandinavia whence came the dissensions. We have thus to record from within our area not only the typical form but also

var. ***Hepburnii*** (Boott) Kuekenthal in Engler, Das Pflanzenreich 38 (IV, 20), p. 70 (1909).

In its full development this has "Spicula oblonga 1-1½ cm. longa, pars ♂ conspicua" and as such occurs at Chesterfield Inlet, Southampton Island, Lake Harbour, and Arctic Bay in northwest Baffin. It was most abundant in the last place, locally dominating the slightly damp but by no means sheltered lower slopes around the head of the bay, and, growing sometimes a full 20 cm. high, looking far more luxuriant than any typical *C. nardina* I have ever seen.

General Distribution. The whole species alpine and arctic, American and European, reaching very high latitudes and transgressing into eastern Asia, but apparently not circumpolar. Northernmost record Cape Salor, 82° 54' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 229).

E. Arctic Distribution. Probably complete on ice-free land, though small and frequently overlooked.

Occurrence. Common on dry, exposed ridges and open, gravelly areas, where it may be abundant to locally dominant.² Also in poor, discontinuous heaths, where it is in many places subdominant to *Dryas*. Grows

¹ Contrast Tengwell (1916, p. 543).

² Contrary to the implications of Simmons (1906, p. 148), the species throughout most of our area, although it may occur on almost any type of soil, shows some preference for, and grows better on, substrata rich in calcium (cf. Nordhagen 1928, p. 288).

anywhere from 3 to 20 cm. high in our area, often approaching the latter limit even in the Far North, although on the other hand even in the extreme south it may be very reduced when living on exposed ridges. In such situations the close caespites may be much eroded on the side whence come the prevailing winds, the leaves here tending to break off at a uniform height to form a flat or saucer-shaped surface, which later may become overgrown by crustaceous lichens (cf. Scholander 1934, phot. on p. 59). The species is not infrequently attacked by a smut.

1. ELLESMERE: c. almost everywhere (cf. Simmons 1906, pp. 147-8), e.g., *Lady Franklin Bay*, Greely (G) apprg. var. *Hepburnii*, Walrus Island, Hart 1875 (K,B); *Hayes Sound*, Bache Peninsula, Malte 1927 (O,G,C), Cape Rutherford, Simmons 1899 (G,N,K,B,C) apprg. var. *Hepburnii*, Twin Glacier Valley, anon. 1875 (K); *South Coast*, Fram Fiord, Simmons 1899 (C), Craig Harbour, Polunin 1934 and 6.
2. DEVON, ETC., ISLANDS: o? Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6.
3. N. BAFFIN: c? Pond Inlet, Polunin 1934 and 6; Arctic Bay, Malte 1927 (O,G,C), Polunin 1936 incl. 2581 2582 2589 var. *Hepburnii*; near Qorlortoq, Freuchen 1924 (C) 844a.
4. C. BAFFIN: f. Clyde, Malte 1927 (O,G). *Cumberland Gulf*, Taylor 1862 (K); Kingnait, Taylor 1860 (K,B); Pangnirtung, Polunin 1934.
5. S. BAFFIN: c. *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927, 8, and 33 (O,G,C), Polunin 1934 and 6 incl. 1124 var. *Hepburnii*; Cape Dorset, Malte 1928 (O,G), Polunin 1934.
6. MELVILLE PENINSULA: o. *Vansittart Island*, Danish Island, Freuchen 1922 (C) 213; *Georgina Island*, Freuchen 1922 (O,C) 12.
7. N. LABRADOR: l? Burwell, Malte 1928 (O,G,C), Polunin 1931, 4, and 6.
8. N. QUEBEC: f. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O,K). *Southampton Island*, South Bay, Malte 1928 (O,G,C) incl. 120628 var. *Hepburnii*, Polunin 1934 and 6 incl. 151 var. *Hepburnii*; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: l? Chesterfield, Malte 1928 (O,G,C) 120560 var. *Hepburnii*, Polunin 1936 incl. 2124 var. *Hepburnii*.

64. *Carex capitata* L., Syst. Nat. ed. 10, II, p. 1261 (1759).

One of my most notable "finds" during the expedition of 1936 was a characteristic tuft of this species growing on a gentle slope of more or less open, damp clay near the shore of Soper (Little Koukdjuak) River, about 8 miles inland from Lake Harbour in southern Baffin. The culms were numerous and averaged about 12 cm. in height, but some axes from the previous year that straggled to a height of 20 cm. indicated that growth was far from complete at the time of my visit (July 27). Nearby was one other, smaller plant, and a single flowering specimen of *Pinguicula vulgaris* surrounded by three small seedlings. Neither species had ever been recorded from within our area before, and both are new to the entire Arctic Archipelago; it certainly looks as if they may have been brought in together by some bird or beast.

General Distribution. Circumboreal; also in the southern hemisphere. Chiefly subarctic and alpine, never high-arctic. The northernmost report that I can find is from "the uttermost point of Cape Hedlund," 72° 42' N. in East Greenland (Sørensen 1933, p. 110).

E. Arctic Distribution. Known only from one spot near Lake Harbour in southern Baffin—See above.

Occurrence. Very rare, but the two plants seen were growing well enough, and promised to fructify abundantly. On an open, gently sloping field of damp, clayey soil, well supplied with water percolating from above. Occurs at Port Harrison and Churchill not far south of our area, but appears generally to be rare in North America (cf. Macoun 1888, p. 109).

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.

65. *Carex maritima* s.l. (Gunn., Fl. Norveg. II, 131 (1772); not O. F. Muell.).

C. incurva Lightf.

As Fernald (1933b, p. 396) points out "most unfortunately...strict priority in nomenclature forces us to abandon the perfectly familiar name *C. incurva*... and to take up for it a name, *C. maritima*, which has been equally familiar as the appellation..." of an entirely different species. Fernald goes on to remark (p. 397), and I thoroughly agree, that he is "unable to follow Kreczetowicz in his over splitting of *Carex maritima*." To be sure, this species varies so much, especially in vegetative characters, that a number of varieties and forms have been erected. But such of these as occur within our area seem to be directly dependent upon local conditions, and, moreover, to show all stages of gradation from one to another and again into the typical form. This is most notably the case with one phase, well marked in its full development and originally described from Ellesmere, which, accordingly, seems best termed

f. *inflata* (Simmons) n. comb.

(*Carex incurva* Lightf. var. *inflata* Simmons, Fl. Ellesm., p. 146 (1906).)

(*C. psychroluta* Kreczetowicz.)

But although the vast majority of specimens of this wide-ranging species from within our area are with little doubt best referred to the typical form, there is one which, even if it is a mere reduction phase, is so strikingly different in its extreme depauperation and generally high-arctic habitat from the robust plant of the south that it seems worth separating as

var. *setina* (Christ) Fernald in *Rhodora* XXXV, p. 397 (1933).

This variety, described from arctic Siberia, occupies most of the farthest north stations of the species around the Pole. With us it is typically developed only in the insular regions; but even from Ellesmere there are many plants that seem referable rather to the typical form, whereas on the other hand in the less favourable habitats even in the extreme south of our area are to be found many specimens that strongly approach var.

setina. Hence it may one day be considered necessary to reduce it to the status of a mere *forma*. I have not always separated it in the citations of individual specimens given below.

General Distribution. The species circumpolar; also in the southern hemisphere. Reaches high latitudes, but apparently not recorded from north of $81^{\circ} 43' N$. (Hart, "Winter Quarters, H.M.S. *Discovery* 1875-6"—specimens in Herb. Kew and British Museum labelled "*Carex nardina*").

E. Arctic Distribution. General and perhaps complete around the coasts, but not yet recorded from several considerable tracts.

Occurrence. Fairly common on dry, sandy shores. Chiefly a coast species, but sometimes to be found on manured areas a little way inland, and very occasionally in damp meadows, as in southwest Greenland (cf. Polunin 1937, field notes). Grows generally about 10 cm. high in the south and less in the north, where it is chiefly represented by var. *setina*, which may be no more than 2 cm. high. On the west coast of Hudson Bay it is, however, often 20 cm. or more high. On favourable sandy shores it may be of considerable importance as a sand-binder, forming a loose mat of interwoven roots and rhizomes, but even so it is often almost entirely buried and hence inconspicuous and liable to be overlooked. Indeed so generally has this been the case that I am amazed to find that we have to record it as new for Baffin, in both the north and south of which it is in reality quite common.

1. ELLESMERE: c. Discovery Harbour, Hart (K,B) 66 as "*C. nardina*." Hayes Sound, Cape Viele, Simmons 1899 (G,N,K,B) 859 f. *inflata*; Bache Peninsula, Malte 1927 (O,G); "Fram Harbour and Cocked Hat Island" (Simmons 1906, p. 146). South Coast, Fram Fiord, Simmons 1899 (G,N,K,B,C); Craig Harbour, Polunin 1934 var. *setina*; Harbour Fiord, Simmons 1900 (N) incl. 2237 as "var. *erecta*"; "Goose Fiord" (Simmons 1906, p. 146). "West Coast, Coal Bay in Baumann Fiord" (Simmons 1906, p. 146).
2. DEVON, ETC., ISLANDS: 1? Dundas Harbour, Malte 1927 (O,G), Polunin 1934 and 6 incl. 750 810 818 820 2512 2521 var. *setina*.
3. N. BAFFIN: c. Bylot Island, Qaersut, Freuchen 1924 (O,C); Pond Inlet, Polunin 1934 incl. 706 var. *setina*; Qilalukan, Mathiassen 1923 (C); Arctic Bay, Polunin 1936.
5. S. BAFFIN: c? Lake Harbour, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6 incl. 269 pars var. *setina*.
8. N. QUEBEC: c. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o? Southampton Island, (?Lyon ex Hooker 1825b, p. 195); South Bay, Malte 1928 (O,G), Polunin 1934.
10. W. COAST HUDSON BAY: f. Fullerton, Macoun 1910 (G,N,C); Chesterfield, Malte 1928 (O,G,C), Gardner 1933 (G), Polunin 1936; Rankin Inlet, Macoun 1910 (N,C).

66. *Carex gynocrates* Wormskj. apud Drejer, Rev. crit. car., p. 16 (1841).
C. dioica L. var. *gynocrates* Ostenfeld

This attractive little sedge, never before recorded from anywhere within our area¹, was in 1936 found to be quite common at Lake Harbour on the south coast of Baffin Island. It is certainly new to the entire Arctic

¹ Unless perhaps the plant that Rae (1850, p. 214) reports from Melville Peninsula as *C. dioica* is referable instead to the present species, as was proposed by Simmons (1913, p. 59), and as indeed seems likely. The claim "Bessel; Asa Gray" of its occurrence in Greenland at $81^{\circ} 40' N$. seems almost certain to be unfounded (cf. Porsild 1920, p. 53).

Archipelago. Later on during the same expedition it was found on both sides of Hudson Bay a little to the south of our area, and finally, during the last call at Port Burwell in northernmost Labrador, it was discovered there too. It varies greatly in appearance according to the stage of development of the fruits, which seem to be produced in rather small numbers (generally only one or two per ♂ axis) within our area; but of taxonomically significant traits I could find none of importance, and even in height it seems to be rather constant—generally about 7 cm.

General Distribution. America, transgressing into eastern Asia. Chiefly north-temperate and subarctic. The northernmost report is from around 72° N. in Siberia "Olenek and mouth of Lena R." (cf. Hultén 1927, p. 173)¹. In West Greenland it extends to around 70° N.

E. Arctic Distribution. Possibly widespread in the south, where it has probably been much overlooked, but so far known only from Lake Harbour in southern Baffin and Burwell in northern Labrador (and doubtfully from Melville Peninsula?).

Occurrence. Apparently rare except very locally, forming at Lake Harbour a loose turf in damp and muddy, poorly vegetated places—most frequently around freshwater pools whose level recedes in summer. This is rather different from the usual bog or thick moss habitat of the species in southwest Greenland (Polunin 1937, field notes).

5. S. BAFFIN: l. Lake Harbour, Polunin 1936.

(MELVILLE PENINSULA: ? Rae 1850, p. 214 as "*C. dioica*".)

7. N. LABRADOR: r. Burwell, Polunin 1936.

67. *Carex chordorrhiza* Ehrh. ex L. fil., Suppl., p. 414 (1781).

Apparently this distinctive and rather striking sedge had been entirely missed by all previous investigators within the Canadian Eastern Arctic and Subarctic regions¹, including myself. Yet in 1936 I not only found it growing plentifully at no less than five of our points of call (three within the area of the present treatise) around the mainland coasts of Hudson Strait and Bay, but also on Southampton Island and again some miles inland of Lake Harbour on the south coast of Baffin — another species new to the entire American Arctic Archipelago.

Always it grew in its characteristic habitat—the margins of freshwater pools in sheltered lowland areas—creeping with conspicuous long stolons on the surface of the wet mud, from which the frequent culms rose obliquely to a height of 10-15 cm. Many of the stolons extended out into the water, sometimes for nearly a metre, but in such cases they were barren.

General Distribution. Widespread, chiefly in north-temperate and subarctic regions, and possibly even circumboreal (?), but not yet reported from the Pacific regions or from Greenland. Northernmost record "Mouths of the Yenissei and Lena", about lat. 72° N. in Siberia (cf. Ostenfeld 1902, p. 52).

¹ Although long known to the southwest from "Hudson's Bay, Cumberland House" (Hooker 1840, II, p. 211).

E. Arctic Distribution. Widespread and perhaps almost complete in the mainland areas of the extreme south, being of rather general occurrence both in northernmost Quebec and on the coasts of Hudson Bay. Also known from two places in the southernmost parts of the Arctic Archipelago (See above).

Occurrence. Fairly frequent around freshwater pools in sheltered lowlands within its limited range, and often dominating a narrow zone just above the water where the margin is of shelving mud.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.

8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Cape Smith, Polunin 1936.

9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Polunin 1936.

10. W. COAST HUDSON BAY: r? Chesterfield, Polunin 1936.

68. *Carex ursina* Dewey in Am. Jour. Sci. XXVII, p. 240 (1835).

Outside of material from Greenland I know of no herbarium that has more than two or three sheets of this perfectly distinct and characteristic species from the whole of North America. Yet it is to be found growing gregariously along the seashores probably throughout our Eastern Arctic area.

General Distribution. ? Probably circumpolar; chiefly rather high-arctic but not yet found north of $79^{\circ} 53' N.$, at which latitude, on the inner west side of Sorgfjord in Spitsbergen, it must be recorded as having its northernmost known limit (Scholander 1934, p. 63).

E. Arctic Distribution. Probably almost complete around shores, but perhaps absent from the northernmost parts of Ellesmere.

Occurrence. Except in the Far North, where it is rather rare, the species is probably common along the seashores wherever these are muddy or of damp sand, its dense tussocks being locally very abundant, or coalescing to form extensive mats around high-water mark in sheltered lagoons. Generally flowering and fruiting profusely, but never observed more than 7-10 cm. high. After *Puccinellia phryganodes* it is about the most important saltmarsh plant within our area, forming a characteristic association with this species and *Stellaria humifusa*, although not descending so far below high-water mark as the grass. Appears to be exclusively halophytic and hence never observed far from the shore, but occasionally seen some metres above high-water mark on patches of open mud in normal land vegetation on areas that have apparently risen out of the sea only in comparatively recent times—e.g., at Clyde on the east coast of Baffin—and where there may also be a supply of salt blown up from the sea as spray.

1. ELLESMERE: r. *Hayes Sound*, Cocked Hat Island, Simmons 1899 (G,N,K,B,C).

"*South Coast*, Walrus Fiord" (Simmons 1906, p. 145).

2. DEVON, ETC., ISLANDS: l? Dundas Harbour, Polunin 1934 and 6.

3. N. BAFFIN: l? Arctic Bay, Malte 1927 (O,G,C), Polunin 1936.

4. C. BAFFIN: l? Clyde, Polunin 1934 and 6.

5. S. BAFFIN: c? Lake Harbour, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
8. N. QUEBEC: o. Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6.
9. ISLANDS IN HUDSON, ETC., BAYS: o. *Southampton Island*, White Island, Mathiassen 1922 (C); South Bay, Sutton 1930 (G).
10. W. COAST HUDSON BAY: o. Fullerton, Macoun 1910 (O,G,N,C); Chesterfield, Polunin 1936.

69. *Carex bipartita* All., Fl. Pedem. II, p. 265 (1785).

C. Lachenalii Schk.

C. lagopina Wahlenb.

From the observations of Mackenzie (1923, p. 348) it seems quite clear that the name employed above, which is now in general use in North America, is the correct one for this species. To be sure, Allioni's figure (*l.c.* tab. LXXXIX fig. 5), which is not unjustly denounced by Kükenthal as "mala", is more reminiscent of *Kobresia simpliciuscula*; but the description obviously applies to the present species. More recently Kreczetowicz (1935, p. 181) has taken up the name *C. tripartita* All. for this plant, but his wrong citation of the figure number suggests that he did not have the plate available for inspection, for it clearly depicts a different species, being quite possibly the same as *C. curvula* All., as already suggested by Kükenthal (1909, p. 186). Beyond this, I am in agreement with Paul Gelting (1934, pp. 162 *et seq.*), who places the familiar arctic saltmarsh "*C. glareosa*" as a variety of the present species. I had hoped in the summer of 1936 to make careful observations on this question over extensive areas, but was not able to do so to my entire satisfaction. I was, however, able to confirm that in the Canadian Eastern Arctic (and also in southwest Greenland, as I saw in the summer of 1937) typical var. *glareosa* is limited to saline habitats, that all individuals occurring away from the shore are referable to the rather variable typical form, but that there do occur in between many individuals that are intermediate in such characters as the width of the leaves, thickness and rigidity of the culms, and shape of the inflorescence. The one or two minor observations that at times made me feel doubtful as to whether these two might not represent separate species after all, I now think are hardly worth mentioning. Moreover, on looking through the material in almost any herbarium, one cannot help but agree with Gelting (1934, p. 162) that "the habitat has played an important role in the determination of the . . . species"; indeed I well remember, when visiting in Europe some years ago one of the world's greatest herbaria, being asked by a well-known specialist on the North European flora whether or not some specimens that I had brought in had come from the seashore—"because that's often the only way to tell them apart". Certainly the two plants belong to the same, almost continuous series; however, the *glareosa* element does seem deserving of full varietal rank as it is typically so well marked and as it is not altogether coincident geographically with *C. bipartita*. Hence I propose:

var. *glareosa* (Wahlenb.) *n. comb.*

(*Carex glareosa* Wahlenb. in K. Vet. Acad. Nya Handl. Stockholm XXIV, p. 146 (1803); *C. Lachenalii* Schk. var. *glareosa* (Wahlenb.) Gelting in Medd. om Grønl. CI, 2, p. 162 (1934).)

However, this first-described but unfortunately less widespread type, with the perigynia "barely 1 mm. broad" (cf. Fernald 1906b, pp. 45 *et seq.*), appears to be very rare in our area, having been detected only at Lake Harbour in southern Baffin. All the rest of the considerable bulk of material from within our area (about 100 sheets) belongs instead to the usual northern plant with plump fruits, which now has to be called

var. **amphigena** (Fernald) *n. comb.*

(*Carex glareosa* Wahlenb. var. *amphigena* Fernald in Rhodora VIII, p. 47 (1906)—"Perigyniis late ellipsoideis ovoideis vel obovoideis 2-3 mm. longis 1.3-1.9 mm. latis fere abrupte rostratis"; *C. marina* Dewey.)

This is the common form occurring almost everywhere around the coasts; however, it frequently shows transitions to *C. bipartita*, as implied by several writers (e.g., Sørensen 1933, pp. 113-4), with the result that we find specimens labelled as hybrids of the two supposed species (e.g., Malte, Burwell 1928, No. 119996).

General Distribution. The whole species circumpolar; also in the southern hemisphere. Widely distributed in the Arctic, reaching high latitudes but apparently not the northernmost coasts, the farthest north records being "Fort Julian," 79° 3' N. in the Hayes Sound region of Ellesmere (Simmons 1906, p. 145¹) and a few minutes farther south in Spitsbergen (e.g., Polunin 1933, field notes).

E. Arctic Distribution. General, and probably almost complete except in Ellesmere, where it appears to be rare, and from whose extreme north it may well be absent. Frequently overlooked and hence not yet reported from Melville Peninsula.

Occurrence. The whole species fairly common in most places northwards to Dundas Harbour on the south coast of Devon Island, but probably rare north of that. The typical form extends at least to northern Baffin, being fairly common in the less soggy marshes and among grassy vegetation on damp hillsides; but it is most characteristic of snowdrift areas, where it grows anywhere from less than 10 to more than 40 cm. high. Var. *glareosa* is very rare with us, being recorded only from Lake Harbour on the south coast of Baffin; it is similar in its general appearance and ecological relationships to var. *amphigena*. This last is confined to saline habitats around the shores, where it is generally common and may be dominant very locally in sheltered places, forming large squalid caespites whose numerous culms arch over weakly and trail in the mud (the difference in habit of typical examples of *C. bipartita* and its saltmarsh forms is well brought out in the photos of Devold and Scholander (1933, p. 118)). Var. *amphigena* is most often found in company with *Carex ursina*, *Puccinellia phryganodes*, and *Stellaria humifusa*. All forms of *C. bipartita*, including those intermediate between the different varieties, appear to fruit abundantly wherever they occur within our area—except for some specimens of the typical form that go too far into the snow-patches.

¹ Published as "*C. glareosa*", but Simmons' remark "in dry places together with *C. rupestris*" is, if anything, rather more suggestive of *C. bipartita*.

1. ELLESMERE: r. "Hayes Sound, 'Fort Juliane'" (Simmons 1906, p. 145) var.¹
2. DEVON, ETC., ISLANDS: 1? Dundas Harbour, Malte 1927 (O,G,C) 118499 heterogeneous, mostly cf. var. *amphigena*, Polunin 1936 intermed. and var. *amphigena*.
3. N. BAFFIN: f. *Bylot Island*, west of Qaersut, Freuchen 1924 (O,C) 932 var. *amphigena*; Pond Inlet, Polunin 1934 and 6 incl. var. *amphigena*; Arctic Bay, Polunin 1936.
4. C. BAFFIN: f. *Cumberland Gulf*, Taylor 1860 (K) as "*C. leporina*" and 1861 (K) var. *amphigena*; Kingnait, Taylor 1860 (K) var. *amphigena*; Pangnirtung, Malte 1927 (O,G,C) var. *amphigena*, Polunin 1934 and 6 incl. var. *amphigena*.
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G); Point Brewster, Potter 1937 var. *amphigena*; York Harbour, Potter 1937 incl. var. *amphigena*. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C) 118502 118503 120328, and 118497 var. *glareosa*, Polunin 1934 and 6 incl. var. *amphigena*, and 1126 var. *glareosa*; Cape Dorset, Malte 1928 (O,G,C) 120342 120389, Polunin 1934 and 6 incl. var. *amphigena*.
7. N. LABRADOR: c. *Lacey Island*, Potter and Brierly 1934 (G) 2359; Cape Chidley, Bell 1884 (O,K) 30414; Burwell, Malte 1927 and 8 (O,G,C) 118505 118506 119991 120006 120046 120055, also 119996 apprg. var. *amphigena* as "*C. glareosa* x *Lachenalii*," Polunin 1931, 4, and 6 incl. var. *amphigena*; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G) 2358; Grenfell Tickle, Potter and Brierly 1934 (G) 2360.
8. N. QUEBEC: c. *Wakeham Bay*, Malte 1927 and 8 (O,G,C) 118504 120270, Polunin 1936 incl. apprg. var. *amphigena*; Sugluk, Malte 1933 (O,G,N) 127009 var. *amphigena*, Polunin 1936 incl. var. *amphigena*; Wolstenholme, Malte 1928 (O,G,C) 120948 120985 incl. var. *amphigena*, Polunin 1934 and 6 incl. var. *amphigena*; Cape Smith, Polunin 1936 incl. var. *amphigena*.
9. ISLANDS IN HUDSON, ETC., BAYS: f. *Akpatok Island*, Polunin 1931 (B). *Southampton Island*, South Bay, Malte 128 (O,G) 120699, Polunin 1934 and 6; *Walrus Island*, Baird 1936 var. *amphigena*.
10. W. COAST HUDSON BAY: f. *Wager Bay*, Macoun 1910 (O, pars) 79027; Depot Island, Freuchen 1923 (O,C) 679 var. *amphigena*; *Chesterfield*, Malte 1928 (O,G,C), Polunin 1936 incl. var. *amphigena*.

Carex leporina L., reported by Taylor (1863, p. 332) from Baffin, is not native in America (although naturalized in the east much farther south). Taylor's plant belongs instead to *C. bipartita*, as I have seen from his specimens and labels in the Kew Herbarium, and as was indeed proposed as probable by Simmons (cf. 1913, p. 61, sub nom. *C. Lachenalii*).

70. ***Carex Mackenziei*** Krecz. in Komarov, Flora U.R.S.S. III, p. 183 (1935).

C. norvegica Willd. ex Schkuhr, 1801, not Retz. 1779 and 1795

This species, noted in 1936 as fairly plentiful along the river estuary at Churchill, has still only been found once within our Eastern Arctic area — by Jas. M. Macoun at Eskimo Point (Cape Eskimo), lat. 61° 5' N. on the west coast of Hudson Bay². Macoun's specimens are typical enough, although the axes are all less than 20 cm. long, and are fruiting plentifully.

¹ See footnote on p. 115.

² See map given by Potter (1932, p. 71) for the distribution of the species in the eastern and central mainland regions of North America; to this we have only one locality to add, viz., Churchill (1936). In 1937 I again found the species, new to Greenland, at two points in the Julianehaab district in the extreme southwest, and later in the same year a Dano-Norwegian botanical expedition found it growing plentifully at Ivigtut, a little farther north.

General Distribution. "American, transgressing into Western Europe and Eastern Asia" (Hultén 1927, p. 181); not really arctic although reaching the extreme north of Scandinavia, whose coasts are tempered by the Gulf Stream. Here it has its northernmost known limit at $71^{\circ} 9' N.$ on the island of Magerø (Dahl 1934, p. 260).

E. Arctic Distribution. Probably limited to the coast of Hudson Bay in the extreme southwest, whence comes our only record.

Occurrence. Apparently rare or at least very local and limited. Not seen by me quite within the area, but elsewhere on the west coast of Hudson Bay it grows plentifully in saltmarshes and is apparently an obligate halophyte—or at least, as Ostenfeld says (1902, p. 56), "exclusively a coast species". In southwest Greenland it forms in its three known stations a characteristic yellowish brown zone near high-water mark on muddy deposits in sheltered fiordhead situations.

10. W. COAST HUDSON BAY: r. Cape Eskimo, Macoun 1910 (O,G,N,C) 79004.

71. *Carex canescens* L., Sp. Pl. ed. 1, p. 974 (1753).

My one collection of this species, which has not otherwise been recorded from within our area, has the perigynia somewhat serrate above, and so is probably referable to the typical form, although it is too immature to say for certain. The plants grew in rather large clumps or loose stools among grasses and other Carices in the well watered angles of snowdrift areas in a valley a few miles inland of the Hudson's Bay Company's Post at Wolstenholme. When discovered, on August 1, 1936, the upright culms mostly equalled the leaves, which were about 20 cm. tall; but 1936 was a particularly "late" summer just here. The culms from the previous year remained straggling to a height of 40-50 cm., indicating that the species was on the whole doing rather well in spite of having its growing season shortened annually by the late melting of the snow that covered it deeply every winter.

General Distribution. Cosmopolite, but not really arctic; it is doubtful whether it grows anywhere farther north than about lat. $71^{\circ} N.$, which it reaches in Scandinavia (cf. Dahl 1934, p. 262).

E. Arctic Distribution. Apparently very limited, having been found only once—a few miles inland of Wolstenholme in the extreme northwest of Quebec.

Occurrence. Extremely rare, as explained above—only a few small patches were seen, all in similar situations and within a few hundred metres of one another.

8. N. QUEBEC: r. Wolstenholme, Polunin 1936 Nos. 1284 1290.

72. *Carex supina* Wahlenb. in K. Vet. Acad. Nya Handl. Stockholm XXIV, p. 158 (1803).

This little sedge, widespread but rarely collected in North America outside of Greenland, was first discovered within our area on the west coast of Hudson Bay by Macoun in 1910. Then I found it in 1934 in northern Baffin, and in 1936 more plentifully at Lake Harbour on the south coast of the same large island. Thus we have additions to make to the distribution map given by Raup (1930, p. 202), and these largely fill in the previously existing "gap" between West Greenland and western central North America. The species is to be recorded as new to the Arctic Archipelago.

General Distribution. Circumpolar; chiefly alpine and rather low-arctic, but reaching the north coast of C. F. Mourier Fiord, 77° 25' N. in East Greenland, where it seems to have its northernmost limit (Sørensen ex Seidenfaden and Sørensen 1937, p. 84).

E. Arctic Distribution. Apparently widespread and just possibly almost complete in the southern two-thirds, but so far only recorded from the west coast of Hudson Bay and from the extreme south and north of Baffin Island.

Occurrence. Probably often overlooked, but still with little doubt rare. Is extremely hardy and xerophytic, growing on dry and exposed gravel banks or, at Lake Harbour, on rock-ledges piled with coarse, crystalline sand unbound by other plants. Here it formed small tufts about 12 cm. high and fruited abundantly.

3. N. BAFFIN: r. Pond Inlet, Polunin 1934 No. 687.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.

10. W. COAST HUDSON BAY: r. Cape Eskimo, Macoun 1910 (O).

73. *Carex rupestris* All., Fl. Pedem. II, p. 264 (1785).

The present species is yet another small but distinctive sedge that has been almost entirely overlooked in our area, as already Simmons (1913, p. 60), reviewing its wide distribution in Ellesmere, thought was more probable than that it could be actually as rare as the few records suggested. Thus, apart from the Ellesmere records and my own more recent reports, the only mention in the literature of this species from anywhere within our area seems to be that of Raup (1936, p. 20), who found some scraps among specimens of *Carex misandra* from Southampton Island. Actually it is one of the most ubiquitous and generally common of all the plants within our area; but still we have to record it as "new" to Baffin, from whose vast central regions there is still not a single report of its occurrence.

It varies considerably in size according to local conditions (sometimes even beyond the usual limits of 5-15 cm.), and also in habit (cf. Sørensen 1933, p. 121), but so far as I can see it does not vary within our area in any character that is of taxonomic importance.

General distribution. Circumpolar; alpine and arctic, including most high-arctic lands if not their northernmost coasts. The farthest north record is probably still to be credited to Greely (cf. Simmons 1906, p. 143), who reported it from Discovery Harbour, 81° 43' N. in Ellesmere (Greely 1888, II, p. 15).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Even if we have no records from some considerable areas, the species is probably common everywhere except towards the highest latitudes, where it seems to be rare. Grows chiefly on dry and exposed, sandy or gravelly flats and ridges, where it may be abundant or even locally dominant, forming a characteristic light greyish yellow "heath", either with or without such species as *Carex nardina* and *Kobresia Bellardi*, but always with a considerable admixture of the terricolous lichens of dry, wind-eroded communities. In other habitats it is as a rule only of secondary importance; but it is rarely quite absent from any area of dry ericaceous or cryptogam "heath". *Carex rupestris* is very frequently attacked by a smut.¹ It often shows some preference for calcareous substrata.

1. ELLESMERE: o. "Discovery Harbour" (Greely, 1888, II, p. 15). "Hayes Sound, 'Fort Julianne'" (Simmons 1906, p. 144). *South Coast*, Harbour Fiord, Simmons 1900 (N,K,C). "West Coast, Bays Fiord" (Simmons 1906, p. 144).
2. DEVON, ETC., ISLANDS: o? *Devon Island*, ?Cape Sparbo, Anderson 1928 (O); Dundas Harbour, Polunin 1934 and 6.
3. N. BAFFIN: c. Pond Inlet, Polunin 1934 and 6; Arctic Bay, Malte 1927 (O, G,C), Polunin 1936; near Qorlortoq, Freuchen 1924 (C).
5. S. BAFFIN: c. *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: f? Angmalortoq Lake, Rasmussen 1923 (C*).
7. N. LABRADOR: o? *Chidley Peninsula*, MacGregor 1905 (K) as "cf. *C. supina*".²
8. N. QUEBEC: o. Wakeham Bay, Malte 1933 (O), Polunin 1936; Wolstenholme, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B). *Southampton Island*, White Island, Angel 1933 (W, *pars* with *Dryopteris fragrans*) 57; South Bay, Sutton 1930 (G, *pars* with *Carex misandra*), Polunin 1934 and 6.
10. W. COAST HUDSON BAY: f. Chesterfield, Malte 1928 (O,G,C), Polunin 1936.

74. *Carex scirpoidea* s.l. (Michx., Fl. Bor.-Am. II, p. 171 (1803)).

Although always immediately recognizable, this species varies greatly within our area in stature (from 5 to 30 cm.), shape of the spike (which may be subglobose), and presence or absence of a cauline leaf (which may be as much as 6 cm. long and overtop the spike). Several forms, varieties, and even species have been segregated, most notably by Kükenthal (1909, p. 81) and Mackenzie (1935, pp. 207 *et seq.*), but such of these as are recognizable in the material from our area seem to be so little constant as to be hardly worth separating.

¹ *Cintractia Caricis* (Pers.) Magnus. According to the report on the *Fungi* by Dr. D. H. Linder, which will be published in Part II of the present series, it is this same smut that causes the characteristic malformations of the fruits of so many other *Carices* in the Eastern Arctic, as well as of both our species of *Kobresia*.

² Cf. Kew Bulletin (anon. 1907, p. 84).

General Distribution. America, transgressing into western Europe and eastern Asia. An alpine and arctic species, having its northern limit at Dundas Harbour, lat. $74^{\circ} 35' N.$ on Devon Island (coll. Malte 1927 and Polunin 1934 and 1936—See below), but reaching almost as far north in Greenland.

E. Arctic Distribution. Probably complete in the south and fairly general northwards to Lancaster Sound, but apparently absent from Ellesmere.

Occurrence. Common in the south and not rare throughout the rest of its range, being quite plentiful in northern Baffin and at Dundas Harbour. Grows chiefly in well drained, grassy and heathy areas that have a good snow-blanket in winter; here, on sunny, south-facing slopes, its numerous tall axes rising from the short, dark rhizome may become a notable feature of the vegetation, even towards the northernmost limits of its range. It is also characteristic of the drier sides and tops of the hummocks that rise from boggy soils to constitute "hillock tundra", and indeed grows in a considerable variety of habitats.

2. DEVON, ETC., ISLANDS: l. Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6.
 3. N. BAFFIN: c? Pond Inlet, Polunin 1934 and 6; Arctic Bay, Malte 1927 (O,G), Polunin 1936.
 4. C. BAFFIN: f. "Scotts Bay and Cape Searle" (Taylor 1863, p. 332 mis-spelt "serpoides"). *Cumberland Gulf*, Kingnait, Taylor 1860 and 61 (K,B, incl. *pars* with *C. Halleri*).
 5. S. BAFFIN: c. *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 33 (O,G,N,C), Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
 6. MELVILLE PENINSULA: f. South shore Fury and Hecla Strait, Parry 1822 (C). "*Lyon Inlet*, Five Hawser Bay" (Parry ex Hooker 1825, p. 405). *Vansittart Island*, Opposite Island, Freuchen 1922 (O,N,C); Danish Island, Freuchen 1922 (C).
 7. N. LABRADOR: f. Burwell, Malte 1928 (O,G,C), Polunin 1931, 4, and 6.
 8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Wakeham Bay, Malte 1928 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Malte 1928 (O,G), Polunin 1936.
 9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island*, Parry 1821 (B); South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).
 10. W. COAST HUDSON BAY: c. Wager Bay, Macoun 1910 (O,G); Fullerton, Macoun 1910 (O,G,N); Chesterfield, Polunin 1936; Rankin Inlet, Macoun 1910 (O).
75. *Carex glacialis* Mackenzie in Bull. Torrey Bot. Club XXXVII, p. 244 (1910).

C. pedata Wahlenb., 1812, not L. 1763

Already in 1906 Simmons pointed out (Fl. Ellesmereland, pp. 142-3) that Wahlenberg's "*C. pedata*" ought probably to have a new name, and there can be no doubt that the one given it 4 years later by Mackenzie is the one we must use. It is yet another little sedge that has been in the past, and probably is to this day, repeatedly missed. Thus in 1937 I found it

in Greenland several degrees farther south than it had previously been recorded, and it is only since the beginning of the century that it has been recognized as growing on the mainland of America at all, although it is now known to occur right across the continent—See map given by Raup (1930, p. 202), to which must be added our records given below and another from Churchill farther south on the west coast of Hudson Bay (coll. Polunin 1934 and 1936).

General Distribution. Circumpolar, chiefly alpine and arctic. Northernmost record c. 79° N. in Hayes Sound, Ellesmere (Feilden 1875, specimen in British Museum *fide* Simmons).

E. Arctic Distribution. Very widespread and perhaps general almost throughout, but not yet recorded from five of our ten major districts.

Occurrence. Occasional in the southern third of our latitude range; elsewhere apparently rare. Grows chiefly but not quite exclusively on calcareous material, generally in dry and exposed, barren looking places, where it may be fairly common. Grows generally only 5-10 cm. high and never much more, but fruits plentifully.

1. ELLESMERE: r. *Hayes Sound*, Feilden 1875 (B). *South Coast*, Harbour Fiord, Simmons 1900 (N,C) 2445.
4. C. BAFFIN: r. *Pangnirtung*, Polunin 1936.
5. S. BAFFIN: l. *Lake Harbour*, Malte 1927 and 33 (O,G,N,C) incl. 118517 *pars* only, Polunin 1934 and 6, plentiful on calcareous areas.
7. N. LABRADOR: r. *Burwell*, Polunin, 1934.
9. ISLANDS IN HUDSON, ETC., BAYS: o. *Akpatok Island*, Polunin 1931 (B, *pars*) 1192; *Coats Island*, Porsild 1930 (O*).

76. *Carex bicolor* All., Fl. Pedem. II, p. 267 (1785).

This most characteristic and attractive little sedge, with its more or less pendulous spikes of rounded, pastel-green fruits peeping out from behind dark scales, although not uncommon in places appears never before to have been recorded from within our area, or indeed from anywhere in the Arctic Archipelago. It varies considerably in size and luxuriance, the culms (which arch in all directions) being sometimes no farther south than Churchill as much as 30 cm. long and bearing a large bract, whereas to the north the plants are much smaller, with culms generally only 3-10 cm. long, and so weak that they scarcely rise above the surface of the ground but allow the fruits to trail in the mud.

General Distribution. ?Circumpolar, chiefly alpine and low-arctic. Northernmost record Prospektal, 73° 37' N. on the east coast of Greenland (Vaage 1932, p. 57, and cf. Gelting 1934, p. 159).

E. Arctic Distribution. Fairly general in the extreme south, including Southampton Island and southern Baffin, but not yet found north of the 65th parallel.

Occurrence. Not infrequent around the margins of pools where there is little competition from plants of ranker growth. Also on patches of bare, wet mud and in open areas in marshes. Except in the extreme south, where it may approach in size the Churchill specimens mentioned above, it

is generally very small and insignificant and hence extensively overlooked, being almost unrepresented even in the greatest American herbaria. Fruits quickly and in plenty.

5. S. BAFFIN: o. Lake Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6; Cape Dorset, Polunin 1934.
8. N. QUEBEC: r. Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. *Southampton Island*, South Bay, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: r? Chesterfield, Polunin 1936.

77. *Carex vaginata* Tausch in Flora IV, p. 557 (1821).

C. sparsiflora (Wahlenb.) Steud.

Even if the American *C. saltuensis* L. H. Bailey is specifically distinct from *C. vaginata*, as has recently been maintained by Seidenfaden and Sørensen (1937, p. 163), it occurs in full development only to the south of our area. On the other hand, all specimens of this group from strictly within our area appear inseparable from material of *C. vaginata* gathered in the extreme north of Scandinavia. Hence I feel justified in following Fernald (1902, pp. 507 *et seq.*) and using the above name without qualification in the present instance.

Once again we have here a highly distinctive sedge, in this case not by any means small or insignificant, that is widely distributed over the southern parts of our area but was entirely missed by all the early workers. It was long ago collected within the Arctic Archipelago, by Anderson on Victoria Island, and so is considered by Simmons in his "Phytogeography" (1913, p. 62), but it has only just recently been mentioned for the first time (Seidenfaden and Sørensen 1937, p. 163) from Baffin or any part of the Eastern Arctic.

General Distribution. Circumboreal, at least with *C. saltuensis*; chiefly alpine and low-arctic. Northernmost record Granatelv, 74° 10' N. in East Greenland (Gelting 1934, p. 174).

E. Arctic Distribution. Widespread over the most southerly parts, including *Southampton Island* and the south coast of Baffin, but unknown to the north.

Occurrence. With us a southern species, not infrequent in its limited range, growing sometimes as little as 7 cm. and rarely more than 15 cm. high. Chiefly in marshy lowland areas that are not too wet in summer or too overgrown by ranker species. Here it may be locally fairly abundant, but without becoming more than a subsidiary component of the vegetation. Also occurs on better drained, grassy areas and among heaths where the surface is dry, although just underneath there is generally a plentiful supply of water.

5. S. BAFFIN: l. Lake Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6.
8. N. QUEBEC: f. Wakeham Bay, Polunin 1936; Sugluk, Malte 1933 (O), Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, South Bay, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: o. Wager Bay, Macoun 1910 (O, pars) incl. 79027 as "*C. lagopina*"; Chesterfield, Polunin 1936.

78. *Carex capillaris* L., Sp. Pl. ed. 1, p. 977 (1753).

This species varies greatly in size, even with purely local differences in exposure. The majority of plants from within our area are between 5 and 15 cm. in height, and so are referable to the typical form. Some, however, are much smaller and may be styled

f. **minima** (Beck) Kuekenthal in Engler, Das Pflanzenreich 38 (IV, 20), p. 590 (1909).

"Culmus non super 3 cm. altus. Folia saepe culmum aequantia. Spiculae breviores 3-5-florae".¹

Other specimens, again, are considerably taller than the usual limits of 5-15 cm., whereas not a few that grow to the south of our area in the forest at Churchill are 30-50 cm. high and belong to the attenuated shade f. *major* (Drej.) Kuekenthal. (This I credit to Kükenthal (1909, p. 590) although he did not formally make the combination anew, for all Drejer gave (1841, p. 54) was " β major et robustior...".) Specimens approaching this form may occur within our area and even in the Far North — e.g., Simmons' plants from Ellesmere have culms up to 24 cm. high.

From Southampton Island and Rankin Inlet I have recently detected specimens "With the branches of the inflorescence more lastingly erect than in the typical form, and the pistillate spikes bearing generally more numerous and more densely clustered flowers. Staminate spikes almost always bearing also some perigynia; perigynia smaller than in the typical form, 1.3-1.8 mm. long, and with a shorter beak (0.3-0.5 mm. long)". These were provisionally referred to *C. Williamsii* Britton, but belong instead to a well marked variety of the present species, viz.,

var. **Porsildiana** Polunin MS. (Meddelelser om Grønland 1940 or 1941).

General Distribution. Circumpolar, arctic and alpine. Northernmost record c. 79° 10' N. in West Greenland (cf. Ostenfeld 1925, p. 7, and Seidenfaden and Sørensen 1937, p. 80).

E. Arctic Distribution. General over the southern part, at least to near the Arctic Circle, and also occurring in southern Ellesmere, but not yet recorded from the intervening areas or from northern Ellesmere.

Occurrence. Fairly frequent in the southern mainland and insular regions northwards to Cumberland Gulf. Rare in southern Ellesmere, and elsewhere either overlooked or absent. Grows chiefly among grasses and other herbs on the more luxuriant meadow slopes, especially where these are fairly damp and on calcareous soil. Also in marshes that are not too wet, and on heaths. Never seen to take any important part in the vegetation covering even locally, and is of no apparent ecological significance as it is not by any means limited to calcareous substrata.

1. ELLESMERE: r. Harbour Fiord, Simmons 1900 (G,N,K,C).

4. C. BAFFIN: o. *Cumberland Gulf*, Taylor 1862 (K); Kingnait, Taylor 1860 (K,B); Pangnirtung, Polunin 1936.

¹ This is Kükenthal's description and I credit the combination to him, as all Beck (1890, I, p. 144) gave was an unqualified " δ minima. Halm so lang oder kürzer als die Blätter. . . ."

5. S. BAFFIN: f. *Frobisher Bay*, Sewall 1927 (G); Point Brewster, Potter 1937; York Harbour, Potter 1937; north of York Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6, rare.
7. N. LABRADOR: o. Burwell, Polunin 1934 and 6 incl. 1091 f. *minima*.
8. N. QUEBEC: f. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. *Southampton Island*, South Bay, Malte 1928 (O,G,C) incl. 120593 var. *Porsildiana*, Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. ?Fullerton, Macoun 1910 (O,G) as "*C. Williamsii*" but probably the present sp.; Chesterfield, Malte 1928 (O,G,C), Polunin 1936; Rankin Inlet, Macoun 1910 (O,G,N,C) 79007 var. *Porsildiana*.

79. *Carex Williamsii* Britton ex Britton and Rydberg in Bull. N. York Bot. Gard. II, p. 159 (1901).

I have seen no fully authenticated specimens of this segregate of *Carex capillaris*, but my material, which answers well to Britton's original description, seems to be amply distinct, most obviously in its more upright habit, acicular and strongly canaliculate leaf-blades, and slender nerved perigynia. It varies almost as much in size as *C. capillaris*, and grows in similar (if perhaps on the whole somewhat drier) grassy situations.

General Distribution. West and central North America, so far known only from the upper Yukon Valley, the coasts of Hudson Bay, and the south shore of Hudson Strait, where it reaches its easternmost limit at Diana Bay (longitude 70°W.). We thus have considerable range extensions to record (cf. Polunin 1937, p. 112), as it was not previously known east of the west coast of Hudson Bay around longitude 94°W. Northernmost record Dawson, 64° 5' N. in Yukon Territory (R. S. Williams ex Britton and Rydberg 1901, p. 160).

E. Arctic Distribution. Apparently limited to the mainland coasts of Hudson Bay and northernmost Quebec.

Occurrence. Very occasional in rather dry grassy areas within its limited range. Never noted as common even locally, or of any importance whatsoever; nevertheless a charming little sedge.

8. N. QUEBEC: o. Diana Bay, Ney and Courtright 1936; Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Cape Smith, Polunin 1936.
10. W. COAST HUDSON BAY: o. Chesterfield, Dutilly 1936, Polunin 1936; Cape Eskimo, Macoun 1910 (O) 79008.

80. *Carex atrofusca* Schkuhr, Riedgr. I, p. 106 (1801).
C. ustulata Wahlenb.

I am following most recent authors and using Schkuhr's name for this sedge instead of that of Wahlenberg, with, however, the reservation that Simmons (1906, p. 140) may yet be right in his conclusion that "the name of Wahlenberg alone is available".

Although at one time, using only the characters mentioned in an artificial key, I had some doubt as to whether this species might not be a mere marsh form of *C. misandra*, I now see that they are abundantly distinct, having in the field practically no resemblance to one another.

Nevertheless, they are frequently collected and mounted together without distinction by amateurs. Within our area the plant is reasonably constant in all characters, including size, the culms being generally about 20 cm. long and never less than 10 cm. or more than 30 cm.

General Distribution. Circumpolar; alpine and arctic, including fairly high latitudes, the northernmost record being in Ellesmere, where it reaches at least 78°52' N. (Deserted Village) and probably Discovery Harbour, 81°43' N. (cf. Simmons 106, p. 140).

E. Arctic Distribution. Probably almost complete on ice-free land, but not with certainty recorded from central Baffin or northern Ellesmere.

Occurrence. Fairly common except in the Far North, but rarely at all abundant. A very graceful species, which it is always a pleasure to find. Grows on wet, muddy or gravelly areas around pools, in the less inundated bogs, and in bare patches in marshy lowlands. Stated by Gelting (1934, p. 158) to be calciphilous, but this is an opinion to which I cannot subscribe as in our area it often grows plentifully on acidic rocks.

1. ELLESMERE: r. ? "Discovery Harbour" (Greely 1888, II, p. 15, as "*C. atrata* Linn.; or *ustulata* Wahl." probably this species, cf. Simmons (1906, p. 140)). "Hayes Sound, Deserted Village" (Hart ex Simmons 1906, p. 140). *South Coast*, Harbour Fiord, Simmons 1900 (N,K,B,C) 2343 2396.
2. DEVON, ETC., ISLANDS: l. Dundas Harbour, Malte 1927 (C), Polunin 1934 and 6.
3. N. BAFFIN: f. Pond Inlet, Polunin 1934 and 6; Arctic Bay, Polunin 1936; ? Port Bowen, Ross 1825 (B).
(C. BAFFIN: ? "*Cumberland Gulf*" (Taylor 1863, p. 332, as "*C. fuliginosa*").)
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G); Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1928 (O,G,C), Polunin 1934 and 6; Amadjuak Bay, Soper 1926 (O, *pars* with *C. misandra*) 125863; Cape Dorset, Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: o? South shore Fury and Hecla Strait, Parry (B); Igloolik, Parry (K) as "*C. caespitosa* var. β ".
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O) 31464 as "*C. fuliginosa*".
8. N. QUEBEC: c. Wakeham Bay, Malte 1933 (O,G), Malte 1936; Sugluk, Malte 1933 (O,G,N), Polunin 1936; Hyla, Bell 1885 (B) 2589; Digges Island, Bell (O) 34722 as "*C. fuliginosa*"; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B) 479 782. *Southampton Island*, South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: c. Wager Bay, Macoun 1910 (O,G,N) 79036; Chesterfield, Malte 1928 (O,G,C), Sutton 1930 (G, *pars* with *Kobresia simpliciuscula*), Polunin 1936; Rankin Inlet, Macoun 1910 (O,G,N) 79038; Cape Eskimo, Macoun 1910 (O,G,N) 79037.

81. *Carex misandra* R. Br. in Suppl. App. Parry's 1st Voyage, p. cclxxxiii (mispaged clxxxiii) (1824).

C. fuliginosa Schk. var. *misandra* (R. Br.) O. F. Lang

One of the most familiar and ubiquitous of all arctic sedges, this species varies within our area in height from 4 to 40 cm., but the existence even in the Far North of occasional quite large individuals suggests that the

reduction elsewhere is merely the result of local exposure and other conditions. The only variation of any real significance that I have been able to find is a rather striking colour phase:

f. *flavida* Fernald in *Rhodora* XXXVI, p. 91 (1934).

This occurred in southern Ellesmere, which is not far from the type locality in northwest Greenland, and also rather less typically at Lake Harbour in southern Baffin.

General Distribution. Circumpolar; all over the Arctic. Northernmost record Cape Benet, 83°2' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 228).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Common almost everywhere and in places abundant to codominant, especially on poor and dry, wind-eroded, heathy areas. Here its coarse, light-coloured caespites may make it very conspicuous, just as its slender nodding axes make it often by far the tallest plant (cf. Polunin 1932b, p. 229, and 1934b, pp. 340, 362, 378). It also grows well in many damper areas, especially in the Far North where there is little struggle with other plants but rather with the physical forces of nature. For it is one of the hardiest of all plants—even if it is often sterile in the Far North and there grows best in the *Cassiope* zone of late-snow areas.

1. ELLESMERE: c. everywhere—about twenty-eight records from almost all localities, incl. Harbour Fiord, Simmons 1900 and 02 (G,N,K,B,C) 2238 f. *flavida*.
2. DEVON, ETC., ISLANDS: c. *Devon Island*, Dundas Harbour, Soper 1923 (O,C), Malte 1927 (O,G,C), Polunin 1934 and 6. *Somerset Island*, Parry (B), Ross 1825 (B); "Port Kennedy" (Walker ex Hooker 1861, p. 85, sub nom. *C. fuliginosa*).
3. N. BAFFIN: c. Pond Inlet and near, Soper 1923 (O,C), Mathiassen 1923 (C), Freuchen 1924 (C) 880 as "*Luzula nivalis*", Malte 1927 (O,G,C), Polunin 1934 and 6, Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O,G,C), Polunin 1936; Port Bowen, Ross 1825 (B).
4. C. BAFFIN: c. Clyde, Malte 1927 (O,G), Polunin 1934 and 6. *Cumberland Gulf*, Kingnait, Taylor 1860 (B,K pars) as "*C. fuliginosa*"; Pangnirtung, Polunin 1934 and 6.
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G,K); Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 33 (O,G,C), Polunin 1934 and 6 incl. 1254 f. *flavida* or near; Amadjuak Bay, Soper 1926 (O, pars with *C. atrofusca*) 125863; between Amadjuak and Tchark-bach Fiords, Bell 1897 (O); Cape Dorset, Malte 1928 (O,G) 120361, Polunin 1934.
6. MELVILLE PENINSULA: c. "Five Hawser Bay" (Parry ex Hooker 1825, p. 406, sub nom. β *squamis*); Duckett Cove, Parry (B). *Vansittart Island*, Bangsted 1923 (C); Opposite Island, Freuchen 1922 (O,C); Danish Island, Mathiassen 1921 (C), Birket-Smith 1922 (C), Freuchen 1922 (K,C); Georgina Island, Freuchen 1922 (C); Repulse Bay (Ross ex Hooker 1840 II, p. 224), Olsen 1922 (O,C).
7. N. LABRADOR: c. Cape Chidley, Bell 1884 (K); Burwell, Malte 127 (O,G,C) incl. 120169, Polunin 1934 and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter 1937.
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936; Wakeham Bay, Malte 1928 and 33 (O,G) 120207 126967, Polunin 1936; Sugluk, Malte 1933 (O,G) 126998, Polunin 1936; Wolstenholme, Polunin 1934 and 6; "Digges Island and Hyla" (Bell ex Macoun 1888, p. 138); Cape Smith, Polunin 1936.

9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B*¹); Mansel Island, Leechman 1936. *Southampton Island*, White Island, Mathiasen 1922 (C); York Bay, Parry 1821 (C*); South Bay, Malte 1928 (O,G,C) 120629, Sutton 1930 (G, *pars* with *C. rupestris*), Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: c. Wager Bay, Macoun 1910 (O,G,N,C); Chesterfield, Malte 1928 (O,G) 120490, Gardner 1933 (G), Polunin 1936; Cape Eskimo, Macoun 1910 (O).

82. *Carex rariflora* (Wahlenb.) Sm., Engl. Bot., tab. 2516 (1813).

This attractive bog species is of more uniform habitat and correspondingly of more uniform size than the last, being generally about 12 (5-25) cm. high; but it varies considerably in appearance with the length of the pedicels, even the lowest of which may be so short and rigid as to hold the spike erect instead of pendulous, and so constitute

f. *erecta* Polunin MS. (Meddelelser om Grønland 1940 or 1941).

"With the branches of the inflorescence stouter and shorter (less than 1 cm. long) than in the typical form, and lastingly erect or suberect. The ♂ spike often absent or rudimentary." The species also varies in the colour of the scales, which except along the midrib are generally of such a dark brown as to appear jet-black in the field; but they can be of almost any shade down to quite a pale brown, a variation that is best displayed at Churchill just outside our area, and which there seems worth retaining as f. *pallidior* N. M. Blytt. This occurrence of forms with light-coloured scales in species that normally have them dark is almost general in this and closely related groups (cf. Fernald 1934, p. 91).

General Distribution. Circumpolar; chiefly subarctic and rather low-arctic. Northernmost known station Cape Giesecke, Wollaston Foreland, 74° 30' N. in East Greenland (Gelting 1934, p. 170); but it reaches nearly as far north in several other regions and may well go farther in one or two of them, as it is evidently often overlooked.

E. Arctic Distribution. Probably complete in the south, including the southernmost parts of the Arctic Archipelago, and extending up to (but apparently not beyond) the Arctic Circle. It is a relatively southern species with us.

Occurrence. Common in the south, but largely limited to marshy areas and preferring the deeper bogs with their acid tendencies. Here it is often locally abundant or dominant, sometimes forming almost pure beds in the wettest places near the margins of streams or pools of fresh water. Indeed it is probably in the extreme south of our area the commonest bog *Carex* of all, as in southern Novaya Zemlya (cf. Holm 1885, p. 43).

4. C. BAFFIN: o. *Cumberland Gulf*, Kingnait, Taylor (K,B*); Pangnirtung, Polunin 1934 and 6.
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O,G,C), Johansen 1927 (C), Polunin 1934 and 6; Cape Dorset, Polunin 1934.
7. N. LABRADOR: f. Burwell, Malte 1928 (O,G,C), Polunin 1936; Bowdoin Harbour, Potter and Brierly 1934 (G).

¹ Specimens mislaid, but the species was abundant on this island (cf. Polunin 1932b, p. 229).

8. N. QUEBEC: c. Diana Bay, Knapp 1936; Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Malte 1928 (O,G), Polunin 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f? Chesterfield, Malte 1928 (O,G,C), Polunin 1936; Cape Eskimo, Macoun 1910 (N,C).

83. *Carex Halleri* Gunn., Fl. Norveg. II, p. 106 (1772).¹

C. VahlII Schk. (1801)

C. norvegica Retz., not Willd.

C. alpina "Swartz"

Unfortunately the last-mentioned, familiar name for this species is invalidated by earlier homonyms (cf. Fernald 1933b, p. 398). Except in its height, which may be anywhere from 5 to 20 cm. but is generally around 10 cm., this species varies little if at all within our area. However, at Churchill a little to the south, it is much taller and coarser, some of the specimens exceeding 50 cm. in height. Comparison of the American distribution map given by Fernald (1933, p. 222) with our records stated below will show that we have a number of minor additions to make to the previously known range of the species.

General Distribution. Circumpolar; chiefly alpine and low-arctic, having its northernmost known station at Theodolit Plateau, 74° 24' N. in East Greenland² (cf. Gelting 1934, p. 158).

E. Arctic Distribution. General in the extreme south, including Baffin northwards to Cumberland Gulf. A markedly southern type with us, not yet authoritatively reported from north of the Arctic Circle.²

Occurrence. Fairly common in the mainland regions of the extreme south, and again in southern Baffin. Small, often overlooked, and of no apparent ecological importance, growing chiefly among larger plants in grassy areas or in the drier type of marsh—where it may be fairly abundant, but only very locally.

4. C. BAFFIN: r. *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B* pars).

5. S. BAFFIN: f. *Frobisher Bay*, Sewall 1927 (G, pars) 238; Point Brewster, Potter 1937; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O) 118480, Polunin 1936; Cape Dorset, Malte 1928 (O,G) 120383 120392, Polunin 1936.

7. N. LABRADOR: r. Burwell, Polunin 1936.

8. N. QUEBEC: c. Stupart Bay, Payne 1886 (T) 11; Wakeham Bay, Malte 1928 (O,G) 120280, Polunin 1936; Sugluk, Malte 1933 (O,G,N) 126973, Polunin 1936; Wolstenholme, Polunin 1936; Cape Smith, Malte 1928 (O,G,C) 120893, Polunin 1936.

10. W. COAST HUDSON BAY: f. Fullerton, Macoun 1910 (O,G,C) 79025; Chesterfield, Malte 1928 (O,G,C) 120411 120419 120533, Polunin 1936.

¹ According to Kreczetowicz (1935, p. 265) "quoad ic. et specim. Oederi, excl. citat. erron. Haller. et Scheuchz"

² The statement in *Flora Arctica* (Ostenfeld 1902, p. 114) of its occurrence in "Ellesmere Land at 78° 52'" is presumably based upon Hart's report (1880, p. 241) from Hayes Sound, which is to be excluded as improbable, being with little doubt founded upon a specimen of *C. glacialis* (cf. Simmons 1906, p. 143, sub nom. *C. pedata*).

84. *Carex holostoma* Drej. in Nat. Tidsskr. Kjøbenhavn III, p. 447 (1841).

Although frequently classed as a variety of the last species, *C. holostoma* in the field stands out as entirely distinct; nor have I seen any transitional forms (cf. Notø 1902, p. 351).

Until 1928 when it was collected by Dr. M. O. Malte at Chesterfield Inlet on the west coast of Hudson Bay, *C. holostoma* was not known in the New World outside of a limited tract in West Greenland¹. Now I have found it to be widespread across the extreme south of our area, for it occurs not only on the mainland parts, but also on Southampton Island and in southern Baffin. It is to be recorded as new not only to the latter, but also to the entire Arctic Archipelago.

General distribution. Low arctic, apparently restricted to Lapland, West Greenland, and eastern North America as far west as the west coast of Hudson Bay. Possibly overlooked elsewhere. Northernmost authenticated record Umanaq, c. 70° 30' N. in West Greenland (cf. Porsild 1920, p. 53)².

E. Arctic Distribution. Widespread around the shores of Hudson Bay and Strait in the extreme south, including the southernmost parts of the Arctic Archipelago. Extends northwards almost to the Arctic Circle in Cumberland Gulf, Baffin.

Occurrence. Generally only occasional in its few known stations, never being common except very locally. Grows chiefly in marshes and on open muddy patches around the margins of pools. Generally between 10 and 20 cm. high, but varying from 7-25 cm., in some places approaching both extremes in the same stand.

4. C. BAFFIN: r. *Cumberland Gulf*, Kingnait, Taylor 1860 (K, pars as "*C. VahlII*") 387.
5. S. BAFFIN: o. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Polunin 1936.
8. N. QUEBEC: l. *Wakeham Bay*, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Polunin 1936.
10. W. COAST HUDSON BAY: l. *Chesterfield*, Malte 1928 (O,G,C), Polunin 1936.

85. *Carex Bigelowii* Torrey ex Schwein. in Ann. Lyc. N. York I, p. 67 (1824).

C. rigida Good., 1794, not Schrank, 1789

C. concolor of authors, not R. Br.

C. vulgaris of authors

C. hyperborea Drej.

A widespread and very variable species. As Mackenzie remarks (1935, p. 380) "Like so many northern plants, its size and development depend on its place of growth", so that, instead of being "strongly stloni-

¹ It is apparently if unaccountably absent from the southernmost parts of Greenland. Thus Magister Johs. Grøntved, Cand. Real. Ellif Dahl and I failed to find it during a whole summer of botanical exploration in these regions in 1937, and the same must be said of the expedition of the Porsilds in 1925.

² Porsild's statement (1920, p. 53) of its discovery by Hart at 72° 20' N. on the island of Prøven seems to need further confirmation, as Hart (cf. 1880, p. 241) evidently considered *C. holostoma* as conspecific with *C. alpina*.

ferous ... 1-4 dm. high", it may be closely tufted and only 4-5 cm. high. More than this, it varies in characters that by some are accepted as having considerable taxonomic importance. Most notable is the form with narrow perigynia¹ and long and stiff peduncles to the lower spikes, which is sometimes separated as *C. anguillata* Drej., and as such has been recorded from within our area by Mackenzie (1935, p. 380). However, it seems best for the time being to include this and all other forms from within our area under the same name (cf. Devold and Scholander 1933, pp. 124-5).

As for the name, the most popular and appropriate one of Goodenough cannot be used, being clearly invalidated by an earlier homonym. Because of this the majority of recent American authors have used instead the name "*C. concolor* R. Br.". But unfortunately the type specimen of this in the British Museum, collected on Melville Island, belongs to *Carex aquatilis* var. *stans*, as has been verified by Messrs. A. J. Wilmott and J. E. Dandy². The earliest valid binomial seems to be the one that I have used above, which Torrey himself (1843, p. 387) some time after allowing its publication decided was merely a synonym of *C. rigida* Good., as he withdrew it in favour of this.

General Distribution. Circumpolar, widespread arctic and alpine. Northernmost record doubtful owing to confusion with the next species, but it certainly reaches Kongsfjord, lat. 79° N. in Spitsbergen (Polunin 1933, field notes).

E. Arctic Distribution. Probably complete in the south and fairly general northwards to Devon Island, but not yet reported from Melville Peninsula (where it has probably been overlooked) or confirmed as occurring anywhere in Ellesmere, whence most if not all reports belong instead to *C. aquatilis* var. *stans*, as is to be seen from the specimens preserved in the Kew and British Museum Herbaria (cf. also Simmons 1906, p. 144).

Occurrence. Abundant almost everywhere in the south and fairly plentiful northwards to the shores of Lancaster Sound. Grows chiefly on dry and poorly vegetated areas, but may occupy a variety of habitats ranging from luxuriant damp meadow or marsh to the most exposed gravel ridges. Often of considerable ecological importance also in dry heathy areas, to which it may give a light, straw-coloured aspect, or which it may even dominate in places.

2. DEVON, ETC., ISLANDS: o. *Devon Island*, Cape Sparbo, Anderson 1928 (O); Dundas Harbour, Malte 1927 (O,G,C) 118552, Polunin 1934.
3. N. BAFFIN: f? Pond Inlet, Malte 1927 (O,G,C) 118529, Polunin 1934 and 6, Bazin 1935 (O,M).
4. C. BAFFIN: c. "Scotts Bay" (Taylor 1863, p. 331); Clyde, Malte 1927 (O,G,C) 118524 118525 118528, Polunin 1934 and 6; "Kivitung" (Boas ex Ambronn 1890, p. 98); "Cape Searle" (Taylor 1863, p. 331). *Cumberland Gulf*, Kingnait, Taylor (B and K pars) as "*Carex stans*" and "*C. fuliginosa*"; Pangnirtung, Soper 1923 (O,C) 111412, Malte 1927 (O,G,C) 118521 118526, Polunin 1934 and 6; Kingua (Giese ex Ambronn 1890, p. 88), Soper 1924 (O); Blacklead Island, Soper 1924 (O).

¹ Only slightly narrower in the material from within our area, which does not seem typical of *C. anguillata* as illustrated in *Flora Danica* (tab. 2846, 1871).

² Cf. Simmons (1913, p. 62) who remarks of *C. concolor* R. Br. "I think the Melville Island specimens must be referred to *C. aquatilis* var. *stans*".

5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K) as "*C. stylosa*"¹; Cape Chidley, Bell 1884 (O) 16682; Burwell, Borden 1904 (O) 63057, Hantzsch 1906 (D*), Malte 1928 (O,G,C) 120056 120156, Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Wakeham Bay, Johansen 1927 (C) 1146, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Johansen 1927 (C) 1013, Malte 1928 (O,G,C) 120999, Polunin 1934 and 6; "Eskimo Village of Hyla" (Bell ex Macoun 1888, p. 142, sub nom. *C. vulgaris* var. *hyperborea*); opposite Digges Island, Low 1898 (O) 23059 orig. as "*C. rariflora*" but rev. Holm as "*C. rigida*" and finally rev. Mackenzie as "*C. anguillata*"; Cape Smith, Malte 1928 (O,G) 128891 120907, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: c. Wager Bay, Macoun 1910 (O,G,N,C) 79018 as "*C. rigida* var. *pallidior*" rev. Mackenzie as "*C. anguillata*"; Chesterfield, Malte 1928 (O,G) 120510, Gardner 1933 (G) 152, Polunin 1936; Fullerton, Macoun 1910 (O,G,N,C) 79017 as "*C. rigida*" rev. Mackenzie as "*C. anguillata*."

*Carex inter*² *Bigelowii* et *aquatilis* var. *stans*

Almost everywhere within the range of *C. Bigelowii* in our area there are to be found specimens that seem to occupy a position intermediate between it and *C. aquatilis* var. *stans*. The situation appears to be much the same in northwest Greenland, to judge by the remarks of Ostenfeld and Lundager (1910, p. 10). Moreover, in many littoral marshes there occur phases that in such characters as the form of the pistillate spikes, the relative size of the bract subtending the lowest of these, and the general habit (especially the thickness of soft sheathing leaf-material left around the bases of the culms), appear to belong either to one of the above species or to this intermediate category, but also bear a strong resemblance to phases of *Carex salina* (cf. Gelting 1934, p. 171, sub nom. *C. subspathacea*). All of this points to the need for a careful revision of all northern material belonging to this group, without which it would be far too dangerous to make any generalizations. From my own collections I must cite the following specimens, which cannot with certainty be placed either in *C. Bigelowii* or *C. aquatilis* var. *stans* but fall between these species in the characters that are generally employed for separating them:

- DEVON, ETC., ISLANDS: Dundas Harbour, 1934, Nos. 758 772 801 818.
 N. BAFFIN: Pond Inlet, 1934 and 6, Nos. 667 693 2454.
 C. BAFFIN: Clyde, 1934 and 6, Nos. 631 644 2597 2601. *Cumberland Gulf*, Pangnirtung, 1934, Nos. 542 563f 584.
 S. BAFFIN: Lake Harbour, 1934, Nos. 395 423 425 430 436 437; Cape Dorset, 1934, Nos. 291 293.
 N. QUEBEC: Wakeham Bay, 1936, No. 1476; Sugluk, 1936, Nos. 1483 1537; Wolstenholme, 1934, No. 199.
 ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island*, South Bay, 1934 and 6, Nos. 125 127 129 140 2263.
 W. COAST HUDSON BAY: Chesterfield, 1936, Nos. 2128 2153.

¹ Cf. Kew Bulletin (anon. 1907, p. 84).

² I am well aware that *inter* takes the accusative in Latin but feel it desirable for the sake of simplicity to retain here the familiar nominative—cf. the present practice of making formal names (which should be feminine, following the substantive *forma*), agree in gender rather with the genus.

86. *Carex aquatilis* Wahlenb. in K. Vet. Acad. Nya Handl. Stockholm XXIV, p. 165 (1803).

Another widespread and polymorphic species, varying considerably within our area. Some of the specimens from the extreme south, including those growing in the most favourable situations on Southampton Island and on the south coast of Baffin, seem to belong to the typical form. The majority from hereabouts, and all from the Far North are, however, referable to the usual northern

var. *stans* (Drej.) Boott, Illustr. IV, p. 544 (1867).
(*Carex stans* Drej.)

Numerous specimens transitional between this and the typical form occur throughout the southern third of our area, and are found as far north as northern Baffin in suitable localities. Nevertheless var. *stans*, with its few spikes, squat form, and broader flat leaves, is when typically developed quite distinct, and as it generally occurs alone in the Far North seems best regarded as a true geographical variety (subspecies).

Besides these main tendencies, the species also varies within our area in numerous features including the shape and colour of the scales and the width of the leaves, which may be extremely long and narrow (e.g., Polunin, Nos. 1326 1327 2322); however, none of these variations seems to be of sufficient constancy to warrant further segregation (cf. Fernald 1902, pp. 495-7).

General Distribution. The species circumpolar; also very widespread latitudinally, including some of the farthest north land. Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 228).

E. Arctic Distribution. Probably almost complete on ice-free land, but not yet recorded from northernmost Labrador in the extreme southeast.

Occurrence. Generally abundant in marshy areas and around the margins of freshwater lakes and pools. In the central parts of our area it is quite one of the most important phanerogams, covering large tracts of country in company with *Eriophora* and other plants of damp lowlands. Thus it is most often only codominant, but may also be completely dominant as a more or less pure stand—especially when colonizing shallow open water, in which case it is generally rank and at least 30 cm. high. It also grows in depressions that dry up in summer, and in such less favourable situations in the Far North may be no more than 5 cm. high.

1. ELLESMERE: c. everywhere—about thirty records from almost all localities; all var. *stans* but incl. Discovery Harbour, Hart (K,B) as "*C. rigida*", Shift Rudder Bay, Feilden (K,B) as "*C. rigida*"; *Hayes Sound*, Feilden 1875 (B) as "*C. rigida*", Alexandra Fiord, Hart 1875 (B) as "*C. rigida*", 'Ptarmigan Hill' and Deserted Village,¹ Hart 1875 (K,B).
2. DEVON, ETC., ISLANDS: c? all var. *stans*. *Devon Island*, Cape Sparbo, Anderson 1928 (O); Dundas Harbour, Malte 1927 (O,G) 118555, Polunin 1934 and 6; Powell Creek, Lyall 1852 (K).

¹ Hart (1880, p. 241) remarks of this plant that "At the Deserted Village lat. 78° 50', it attained a height of close on two feet, by far a greater growth than that of any other herbaceous plant seen north of Disco".

3. N. BAFFIN: c. everywhere—numerous records from almost all localities; mostly var. *stans* but incl. Pond Inlet, Polunin 1934 and 6 apprg. var. *stans*; Arctic Bay, Polunin 1936 apprg. var. *stans*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities; mostly var. *stans* but incl. Clyde, Polunin 1934 and 6 apprg. var. *stans*; Cumberland Gulf, Kingnait, Taylor 1860 (K, pars only).
5. S. BAFFIN: c? Frobisher Bay, Sewall 1927 (G). South Coast, Lake Harbour, Polunin 1936 intermediate and var. *stans*, also 2322 form with narrow leaves; Cape Dorset, Polunin 1934 and 6 incl. var. *stans*.
6. MELVILLE PENINSULA: c? all var. *stans*. Igloolik, Edwards (B). Vansittart Island, Mathiassen 1921 (C); Danish Island, Freuchen 1922 (O,C); Repulse Bay, Hooper 1821 (L), Olsen 1922 (C).
8. N. QUEBEC: c. Wakeham Bay, Polunin 1936 var. *stans*; Sugluk, Polunin 1936 incl. intermediate and var. *stans*; Wolstenholme, Polunin 1934 and 6 var. *stans*; Cape Smith, Polunin 1936 incl. intermediate and var. *stans*, also 1326 1327 form with narrow leaves.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Mansel Island, Leechman 1936 var. *stans*. Southampton Island, York Bay, Hooper 1821 (L, note only) var. *stans*, Parry (C*), Mathiassen (C) var. *stans*; South Bay, Malte 1928 (O,G,C), intermediate and 120611 120682 var. *stans*, Sutton 1930 (G) var. *stans*, Manning 1934 apprg. var. *stans*, Polunin 1934 and 6 incl. intermediate and var. *stans*; Walrus Island, Baird 1936 var. *stans*.
10. W. COAST HUDSON BAY: c. Wager Bay, Macoun 1910 (O,G,N) 79018a var. *stans* as "*C. rigida* var. *inferalpina*"; Chesterfield, anon. 1792 (B) var. *stans*, Malte 1928 (O,G,C) 120538, Polunin 1936 incl. intermediate and var. *stans*; Rankin Inlet, Macoun 1910 (O,N,C) 79020 var. *stans* as "*C. rigida* var. *inferalpina*"; Cape Eskimo, Macoun 1910 (O) 79019 as "*C. rigida* var. *inferalpina*".

87. *Carex salina* Wahlenb. in K. Vet. Acad. Nya Handl. Stockholm XXIV, p. 165 (1803).

This species, although very widespread in one form or another in the American Arctic, has like many other saltmarsh and strand plants been so generally overlooked that we have to note it as not previously recorded from within our area¹. It is also, of course, new to Baffin—although not to the Arctic Archipelago as a whole, having been collected on King William Island by the Gjøa Expedition.

A few of my gatherings from the extreme south of our area, including some from Southampton Island and Cape Dorset, are up to 25 cm. in height and seem properly referable to the head form. Most, however, are considerably smaller, answering to *C. reducta* Drej., and matching the figure given in Flora Arctica (Ostenfeld 1902, p. 74) of "*Carex salina* Wg., transition to var. *subspathacea*...." This intermediate is the most widely ranging form within our area, stretching from the extreme south to the northernmost localities inhabited by the species. Almost as widespread but far less common is the plant that some modern authors treat as a separate species, but which I have seen on so many occasions and along so many northern shores grading by imperceptible stages into *Carex salina* that I follow Ostenfeld (1902, p. 75) and some others in retaining it under this species as

var. *subspathacea* (Wormskj.) Tuckerm., Enum. Meth., p. 12 (1843).

¹ Except very recently by Polunin (1938b, p. 97).

Thus, starting near the lowest level of phanerogamic vegetation near the sea, a single stand will often show this form with its extremely dwarfed and typically curved axes and leaves growing almost side by side with taller, upright plants, which in turn, especially higher up from the water, show transitions to the *reducta* phase and thence to the head form. And although I admit that I do not understand this extreme variation, I feel in regard to this group, as with many others, that more close study in the field and less extreme splitting in the herbarium might give us a truer representation of the actual facts, as well as a much better working system.

General Distribution. The whole species circumpolar; wide-ranging latitudinally, but not often very high-arctic. Northernmost record "Innermost part of Rijpfjorden," c. 79° 56' N. in North-East Land, Spitsbergen Archipelago (E. Dahl 1937, p. 34).

E. Arctic Distribution. Very widespread and perhaps almost complete around the coasts, although not yet recorded from some considerable tracts in the central parts, or from anywhere north of Dundas Harbour on the south coast of Devon Island.

Occurrence. Fairly frequent on damp, sandy and muddy seashores in the south; rarer in the north. Never seen away from the influence of salt water, but at the most eluviated and least saline points to which it reaches it appears to grade into *C. aquatilis* var. *stans*, and possibly also into *C. Bigelowii*, which is itself not always distinct from phases of *C. aquatilis* (cf. p. 131). Just above high-water mark *C. salina* occasionally forms close littoral meadows, especially of var. *subspathacea* or the *reducta* phase, but more often it is mixed with other halophytes and largely hidden.

2. DEVON, ETC., ISLANDS: r? Dundas Harbour, Polunin 1936, No. 2492 apprg. var. *subspathacea* and Nos. 2522 2523 transitional to *C. aquatilis* var. *stans*.
3. N. BAFFIN: o. Pond Inlet, Polunin 1934 var. *subspathacea*; Arctic Bay, Polunin 1936 apprg. var. *subspathacea*.
4. C. BAFFIN: r. Cumberland Gulf, Kingnait, Taylor (K, *pars* with *C. aquatilis* var. *stans*) var. *subspathacea*.
5. S. BAFFIN: l. Frobisher Bay, Point Brewster, Potter 1937 No. 8280 apprg. var. *subspathacea*; Cape Dorset, Polunin 1934 and 6 incl. 257 intermediate, and 2264 2267 var. *subspathacea*, also 294 intermediate to *C. aquatilis* var. *stans*.
7. N. LABRADOR: f? Burwell, Polunin 1934 and 6 Nos. 920 921 1109 intermediate, 1110 var. *subspathacea*.
8. N. QUEBEC: f. Wakeham Bay, Polunin 1936 incl. 1426 1449 1450 apprg. var. *subspathacea*; Sugluk, Polunin 1936 incl. 1493 1499 1518 1519 1530 apprg. var. *subspathacea*; Cape Smith, Polunin 1936 No. 1313 doubtful, No. 1342 apprg. var. *subspathacea*.
9. ISLANDS IN HUDSON, ETC., BAYS: l. Southampton Island, South Bay, Polunin 1934 and 6 incl. 141 143 var. *subspathacea*, and 2275 transitional to *C. aquatilis* var. *stans*.
10. W. COAST HUDSON BAY: l? Chesterfield, Malte 1928 (O,C) 120481 apprg. var. *subspathacea* as "*C. concolor*", Polunin 1936 Nos. 2122 2163 2195 2213 all doubtful, 2130 2134 2169 2230 apprg. var. *subspathacea*.

88. *Carex microglochin* Wahlenb. in K. Vet. Acad. Nya Handl. Stockholm XXIV, p. 140 (1803).

Uncinia microglochin Spreng.

This inconspicuous but interesting little plant, whose few perigynia mature quickly and soon drop off, is very often overlooked. Until very recently (cf. Polunin 1939, p. 39) it was unrecorded from our area, although long known to the south and collected at Rankin Inlet by Jas. M. Macoun in 1910. It has recently been found, new to the Arctic Archipelago, in southeastern Baffin: "Bay 5 miles N. of Point Brewster, Frobisher Bay, Aug. 6, 1937, coll. Robert Mulligan." The specimens were kindly sent to me at the British Museum by Professor David Potter of Clark University. Specimens from within our area are generally less than 10 and rarely more than 15 cm. in height, but only a little farther south, at Churchill on the west coast of Hudson Bay, I have seen them growing up to 25 cm. high.

General Distribution. ? Circumpolar; chiefly boreal and subarctic, with a subspecies in the southern hemisphere. Northernmost record Cape Giesecke, 74° 30' N. in East Greenland (Gelting 1934, p. 165).

E. Arctic Distribution. Widespread in the extreme south, being known from the east and west coasts of Hudson Bay and from Frobisher Bay in southeast Baffin.

Occurrence. Rare to occasional within its limited area, growing chiefly on more or less open clay or mud flats low down by the sea—or sometimes farther back in fairly luxuriant grassy vegetation so long as the soil is lastingly rather damp.

5. S. BAFFIN: r. *Frobisher Bay*, near Point Brewster, coll. Robert Mulligan (Potter, No. 8293) 1937.

8. N. QUEBEC: r. *Cape Smith*, Polunin 1936.

10. W. COAST HUDSON BAY: o. *Chesterfield*, Polunin 1936; Rankin Inlet, Macoun 1910 (O) 79024.

89. *Carex saxatilis* L., Sp. Pl. ed. 1, p. 976 (1753).

C. pulla Good.

C. vesicaria L. subsp. *saxatilis* (L.) Kuekenenthal

A very complex and variable species, which in the western part of our area "runs into" phases of the next two. According to the subdivisions given by Fernald (1901, p. 50), only a small proportion of the specimens from within our area—perhaps only a single one from Southampton Island and another from Chesterfield—should be referred to the typical form. Thus some are too tall and coarse, so approaching var. *rhomalea* Fernald, but the vast majority are medium in size (generally (1) 2-5 dm. high) and have narrow leaves and relatively long and slender pistillate spikes; they are best called

var. *miliaris* (Michx.) L. H. Bailey in Bot. Gaz. IX, p. 120 (1884).
(*Carex miliaris* Michx.)

Even the material to which I have applied this name is somewhat heterogeneous, like most herbarium aggregations that I have seen, but none of the variable characters seems sufficiently constant in my material to warrant

any further segregation. Neither this variety nor the typical form have been authoritatively reported from anywhere in the Arctic Archipelago¹, where, indeed, they are rather rare.

General Distribution. The species circumpolar; alpine and arctic. Northernmost record, inner west side of Sorgfjord, c. 79° 53' N. in Spitsbergen (Scholander 1934, p. 62).

E. Arctic Distribution. Widespread in the extreme south, including Southampton Island and the south coast of Baffin, but not authoritatively reported from north of the 65th parallel.

Occurrence. Generally only rare to occasional, except very locally. Grows in tufts (which may be as much as ½ m. in diameter) by the sides of freshwater pools and streams, or in areas that are inundated early in the summer but later dry out. Chiefly in open, muddy habitats, but also occurring in closed marshes. Generally less tufted when growing among other plants.

5. S. BAFFIN: o. Lake Harbour, Malte 1927 and 8 (O,G,N,C) 118540 121006 var. *miliaris*, Polunin 1936 var. *miliaris*; Cape Dorset, Polunin 1934 var. *miliaris*.
8. N. QUEBEC: l. Cape Smith, Malte 1928 (O,G) 120895 var. *miliaris*, Polunin 1936 var. *miliaris*.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Nottingham Island, Bell 1884 (K) ? var. *miliaris*. *Southampton Island*, South Bay, Polunin 1934 No. 142 typical form.
10. W. COAST HUDSON BAY: f. Chesterfield, Sutton 1930 (G) typical form, Freuchen 1923 (C) 699 700? as "*C. compacta*", Polunin 1936 var. *miliaris*; Rankin Inlet, Macoun 1910 (O,N) 79040 var. *miliaris*; Cape Eskimo, Macoun 1910 (O,N,C) 79041 var. *miliaris*.

90. *Carex physocarpa* Presl, Rel. Haenk. I, p. 205 (1828).
C. ambusta Boott

I am still very doubtful as to whether this should be recognized as a distinct species in our flora. To be sure, Mackenzie (1935, p. 449) reports it from Hudson Bay and I have seen specimens so named by him from within our area. But most of these seem better referred to *C. saxatilis*, and, transitions being common, I am not sure that the *physocarpa* element should not be included as a variety of that species (cf. Kükenthal 1909, p. 728). However, some fairly typical specimens occur within our area on the west coast of Hudson Bay, and, *C. physocarpa* being in its full development an entity distinct from *C. saxatilis*, I am following most modern authors in keeping them separate, while admitting that I do not properly understand the group, whose characters seem to be almost fluid in their variability. This is most notably the case with the length of the peduncles — a character stressed by Bailey (1887, p. 65), but already refuted by Gelting (1934, p. 173) as invalid — on which the appearance of any individual plant so largely depends.

It will be noted that I am following Kükenthal (l.c.) and Mackenzie (l.c.) in including *C. ambusta* as a synonym of *C. physocarpa*, although

¹ In the absence of any confirmatory specimen, Taylor's report (1863, p. 332) from Scotts Bay, 71° 10' N. on the east coast of Baffin, must be assumed to belong to some other species.

here again I am not at all sure that the right course has been followed. Certainly my *C. physocarpa* so constituted is a disturbingly heterogeneous series.

General Distribution. Western and central North America, alpine and subarctic. Northern limit apparently around 67° N. in the upper Yukon and Mackenzie Districts (cf. Mackenzie 1935, p. 449).

E. Arctic Distribution. Chiefly on the west coast of Hudson Bay in the extreme southwest, but extending to Southampton Island and southwest Baffin, so that it has to be added to the flora of the Arctic Archipelago.

Occurrence. Rare except at Chesterfield, forming clumps 20-60 cm. high around the margins of freshwater pools — especially where the water disappears in summer and leaves a bare mud or gravelly surface that dries very slowly.

5. S. BAFFIN: r. Cape Dorset, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: 1. Fullerton, Macoun 1910 (O,N,C) 79042; Chesterfield, Malte 1928 (O,C) 120464, ? Freuchen 1923 (O), Gardner 1933 (G) 356 417, Polunin 1936.

91. *Carex membranacea* Hook. in App. Parry's Jour. 2nd Voyage, p. 406 (1825).

C. compacta R. Br., 1819, not Krockner, 1814

C. membranopacta L. H. Bailey

Robert Brown's name is closely antedated by another *C. compacta*, but this is not the case with Hooker's name for the species, which must be used instead of the more generally applied one of Bailey (cf. Mackenzie 1935, p. 454). I am quite unable to agree with Paul Gelting (1934, p. 174) when, writing on the flora of a part of East Greenland, he says of this species that "distinct distinguishing characters are absent", and accordingly places it under "*C. saxatilis* s.l.". The explanation seems to be merely that there is no *C. membranacea* in Greenland. *C. membranacea*, with its peculiar long underground rhizomes, its very upright habit, its more or less sessile, barrel-shaped spike of shining black membranous scales, and its inflated perigynia, has always seemed to me one of the best characterized and most distinct species in our area; hence I well understand Simmons' annoyance (1913, p. 64) with Kükenthal for ignoring (1909, p. 728) his earlier statements to this effect (Simmons 1906, pp. 136-8) and placing it as a variety of *C. saxatilis*.

C. membranacea does, however, vary considerably within our area — particularly in the coarseness and breadth of leaf and stem and in the number, colour, and shape of the ♀ spikes. These last may be anywhere from sessile to long-peduncled.

General Distribution. Arctic and subarctic America, transgressing into easternmost Asia. Northernmost record Lastraea Valley, 78° 52' N. in Ellesmere (Simmons 1906, p. 138).

E. Arctic Distribution. Almost complete on ice-free land, but possibly absent from the extreme north and west of Ellesmere.

Occurrence. Generally abundant in damp places, especially along the margins of freshwater streams and lakes, where it is often dominant, or codominant with *C. aquatilis* var. *stans* and *Eriophora*. One of the chief constituents of marshes almost throughout our area, but may also dominate less damp hillock tundra and other terrains, or clay plains that dry out almost entirely in late summer.

1. ELLESMERE: 1. *Hayes Sound*, "Lastraea Valley" (Simmons 1906, p. 138); Twin Glacier Valley, Simmons (N) 868; Bedford Pim Island, Simmons 1899 (K) 1254. *South Coast*, Fram Fiord, Simmons 1899 (C) 1602; Craig Harbour, Polunin 1934 and 6; Harbour Fiord, Simmons 1900 (G,B,C) 2341 2342.
2. DEVON, ETC., ISLANDS: f. *Devon Island*, Cape Sparbo, Anderson 1928 (O); Dundas Harbour, Polunin 1934 and 6. *Somerset Island*, Parry (B), (Ross ex Hooker 1826, p. 128).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Port Bowen, Parry (B) as "*C. pulla*".
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. "*Interior*" (Rae 1850, p. 214); Igloolik, Parry (K*). *Vansittart Island*, Freuchen 1922 (N,C) 306, Bangsted 1923 (C) 405; Danish Island, Mathiassen 1921 (C) 156, Freuchen 1922 (C) 240 290, Birket-Smith 1922 (C) 1373a; Repulse Bay, Olsen 1922 (C) 360.
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K) as "*C. pulla*"¹; Cape Chidley, Bell 1884 (O) 34723; Burwell, Bell 1884 (G), and six others.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. Nottingham Island, Bell 1884 (O) 30890 as "*C. saxatilis*".
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities.

JUNCACEAE

92. *Luzula spadicea* (All.) DC., Fl. Franç. III, p. 159 (1815).

All material of the *Luzula parviflora* group that I have seen from within our area belongs to the narrow-leaved *L. spadicea*, which also has "bracteae et prophylla florum lacera vel ciliata". *L. parviflora* itself, although it is common in southern Greenland and also farther south in eastern North America, appears to be absent from our area (See below). However, some of my specimens belonging to this group are indistinguishable from the reduced and generally rather high-arctic *L. Wahlenbergii* Rupr. This, according to Buchenau (1906, p. 63), is only "im arktischen Europa und Asien bis zum Ochotzkischen Meere, Spitzbergen, Novaja-Semlja". Nevertheless it seems to occur in our area, and there (as also elsewhere) to "run into" true *L. spadicea*, so I see no alternative, if indeed we are to recognize it at all, to taking it up as

var. *Wahlenbergii* (Rupr.) Buchenau in Engler, Das Pflanzenreich 25 (IV, 36), p. 63 (1906).

¹ Cf. Kew Bulletin (anon. 1907, p. 84).

This is typically only about 15 cm. high, and has especially narrow leaves and copiously lacerated bracts. It occurs in its full development at Pangnirtung, Baffin Island, which is the northernmost known station of the species in our area, and again at Wolstenholme, on the south shore of Hudson Strait.

General Distribution. ? The whole species probably circumpolar, but not yet reported from Greenland. Alpine and arctic; northernmost record Bjørndalen, c. 78° 12' N. in Isfjord, Spitsbergen (Nathorst 1883, p. 37, sub nom. *L. Wahlenbergii*).

E. Arctic Distribution. Widespread and perhaps almost general in the south, including Southampton Island and Baffin northwards to Cumberland Gulf, but not yet recorded from north of the Arctic Circle.

Occurrence. Not infrequent within the limits given above. Grows 10-40 (50) cm. high, chiefly in *Sphagnum* bogs and marshes, but sometimes (at least in the case of var. *Wahlenbergii*) on drier patches of open, clayey soil. May become fairly abundant and of some ecological importance, but only very locally.

4. C. BAFFIN: f. *Cumberland Gulf*, Kumlien 1878 (G,N) 1031, Taylor 1860 (K,B); Pangnirtung, Malte 1927 (O,G,C) 118581 as "*L. parviflora*", Polunin 1934 and 6 incl. 495 545 2609 var. *Wahlenbergii*, Turner 1935 (K) as "*L. Wahlenbergii*"; Kekerten Island, Taylor 1860 (K).
5. S. BAFFIN: r. Lake Harbour, Polunin 1936.
8. N. QUEBEC: c. Wakeham Bay, Malte 1927 (O,G), as "*L. parviflora*", Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G) 121001 as "*L. parviflora*", Johansen 1927 (C) 1002 as "*L. parviflora*", Polunin 1934 and 6 incl. 1296 var. *Wahlenbergii*; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. "*Southampton Island*, Kirchoffer River" (Mathiassen ex Grøntved 1936, p. 31, sub nom. *L. parviflora*).
10. W. COAST HUDSON BAY: o. Depot Island, Freuchen 1923 (O,N,C) 678 as "*L. parviflora*"; Chesterfield, Malte 1928 (O,G,C) 120434 as "*L. parviflora*", Polunin 1936.

Luzula parviflora (Ehrh.) Desv.

This species has been mentioned by Simmons (1913, p. 65) and others following him as occurring within our area. Having failed myself to find a single specimen of it nearer than the Atlantic coast of Labrador and south-west Greenland, although I have seen or collected hundreds of the closely related and often confused *L. spadicea*, I have little hesitation in excluding the much more southern *L. parviflora* from our area and transferring all the records of it to *L. spadicea*. Indeed the collections mentioned by Simmons were originally reported as *L. spadicea*, to which all the specimens that I have seen named *L. parviflora* from within our area are properly referable; Simmons' reasons for changing the name are unknown to me.

93. *Luzula nivalis* (Laest.) Beurl. in Bot. Not., p. 55 (1853).

L. arctica Blytt

L. hyperborea R. Br., in part

In connection with the synonymy of this and the following species, and my reasons for discarding Robert Brown's name, it may be mentioned that the material of his *L. hyperborea* in the Gray Herbarium, collected during

Parry's second voyage and probably determined by Brown himself, is very mixed. This material consists of two plants, labelled "*Luzula hyperborea* 1 Mr. Edwards 2 Mr. Fisher" but actually belonging to two different species, 1 being *L. confusa* and 2 *L. nivalis* (cf. also Fries 1873, p. 40). That the two species have frequently been confused by other writers besides Brown has already been noted by Simmons (1913, p. 66); actually they are abundantly distinct both in form and ecological relationships.

Luzula nivalis in our area varies greatly in size—from 4 to 30 or more cm. in height. Such variation does not seem to depend merely upon local habitat conditions, as quite large specimens occur in many places in the Far North, and again very small ones will frequently be found mixed with large ones in the south. Occasionally plants will be found even less than 4 cm. high and, "forming compact little mats of dense and confluent tufts," are to be referred to

f. *nana* Scholander in *Skrifter om Svalbard og Ishavet*, No. 62, p. 56, 1934.

General Distribution. Circumpolar; all over the Arctic including the northernmost coasts, the "record" being Low Point, 83°6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 233).

E. Arctic Distribution. Doubtless complete on ice-free land.

*Occurrence.*¹ Common throughout the area, but apparently never dominant. Grows chiefly in damp places, especially in moss-mats and marshes. Thus characteristic of depressions having a good covering of snow in winter, but also occurring in heathy areas and sometimes on open clay or gravel plains.

1. ELLESMERE: c. almost everywhere—about twenty-two records from widely scattered localities (cf. Simmons 1906, p. 136), e.g., *North Coast*, Feilden Peninsula, Feilden (B) as "*L. campestris* var.", Egerton Valley, Feilden (B) as "*L. campestris* var.", Cape Richardson, Hansen 1920 (C), Floeberg Beach, Feilden (B) as "*L. campestris* var."; *Hayes Sound*, Bache Peninsula, Malte 1927 (O,G,C), Bedford Pim Island, Simmons 1899 (K,C); *South Coast*, Fram Fiord, Simmons 1899 (G,C), Craig Harbour, Polunin 1934 and 6, Goose Fiord, Simmons 1901 (N).
2. DEVON, ETC., ISLANDS: c. "Graham and Buckingham Islands" (Schei ex Simmons 1913, p. 67); "North Kent" (Simmons 1909b, p. 19). *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6; between Beechy Island and Northumberland Sound, Lyall 1852 (K) as "*L. confusa*"; 'Wellington Channel', Lyall 1853 (K) as "*L. confusa*."
3. N. BAFFIN: c. *Bylot Island*, Tuarpat, Freuchen 1924 (C); Pond Inlet, Malte 1927 (O,C), Polunin 1934 and 6; Tulukan, Mathiassen 1923 (C); Arctic Bay, Polunin 1936; Gifford Fiord, Mathiassen 1922 (C).
4. C. BAFFIN: c. Clyde, Polunin 1934 and 6. *Cumberland Gulf* (?Taylor 1863, p. 331), (Kumlien 1879, p. 166, sub nom. *L. arcuata* var. *hyperborea*); Pangnirtung, Polunin 1934 and 6.
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G); Point Brewster, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.

¹ To the records given below should probably be added others, e.g., from Macoun's Catalogue (1888, pp. 67-9), but owing to the frequent confusion of *L. nivalis* with other species I do not dare include these older records without having seen the specimens.

6. MELVILLE PENINSULA: c. South shore Fury and Hecla Strait, Parry 1822 (C) as "*L. hyperborea*", Freuchen 1922 (C); Igloolik, Parry 1823 (C), Edwards (B); Pingerqalik, Mathiassen 1922 (C); Ugli Island, Mathiassen 1922 (C); Point Elizabeth, Bangsted 1922 (C); Duckett Cove, Parry 1821 (C) as "*L. hyperborea*".¹
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G); Burwell, Porsild 1930 (O*), Polunin 1931, 4, and 6, plentiful; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Stupart Bay, Payne 1886 (T) 14 as "*L. campestris*"; Wakeham Bay, Johansen 1927 (C) 1143, Malte 1928 and 33 (O,G,C), Polunin 1936; King George Sound, Bell 1897 (O) 18793 as "*L. spicata*"; Sugluk, Malte 1933 (O,G), Polunin 1936; Wolstenholme, Johansen 1927 (C) 1004, Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O, pars) 62496. *Southampton Island*, York Bay, Parry 1821 (C) as "*L. hyperborea*"; South Bay, Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: ? Chesterfield, Polunin 1936.

Luzula cf. *nivalis* x *confusa*

A plant originally named *L. confusa*, but having the broad leaves shot with purple towards the base and possessing also some other characters of *L. nivalis*, was collected by the late Dr. M. O. Malte at Port Burwell in 1933 (No. 126810). It seems to combine the characters of the two species in such a way as to look like a hybrid between them. Such hybrids have already been recorded (e.g., by Buchenau 1906, p. 70, sub nom. *L. arctica* x *confusa*). Also possibly referable to this hybrid, although looking rather different from Malte's specimen, is a sheet which I collected in 1934 on Devon Island (No. 770), where again both species abound.

94. *Luzula confusa* Lindeb. in Bot. Not., p. 9 (1855).

L. hyperborea R. Br., in part

L. arctica (Wahlenb.) Sw. var. *congesta* (Lindeb.) Kjellm.

One of the most abundant, ubiquitous, and ecologically important of all arctic plants, this species will be seen to vary considerably if sufficient material is examined. However, the variations are linked to the head form by plentiful intermediate stages, and, because of this and because they concern characters that are of little taxonomic importance elsewhere in the group, seem hardly worth describing or even enumerating. With regard to size, the plants are generally around 15 or 20 cm. in height, but vary from 5 to 35 cm. within our area.

That sheets labelled "*L. hyperborea* R. Br." frequently consist of a mixture of *L. confusa* and *L. nivalis* has already been mentioned (p. 140); the same is true of Robert Brown's type sheet in the British Museum, so that it seems best to discard his name altogether.

Several recent authors, including Drs. Th. Sørensen (1933, p. 162) and Paul Gelting (1934, p. 217), have advocated the retention of *L. confusa* as a variety of *L. arcuata*. To be sure, the limits are none too sharply defined,

¹ A scrap in the British Museum collected at Repulse Bay during Parry's second expedition and labelled "*Carex ustulata*?" probably belongs to the present species.

as I saw recently in southwest Greenland where there occur plants that have been referred to both species. However, in our area no true *L. arcuata* has yet been found, despite several reports, and altogether I prefer at least for the time being to maintain *L. confusa* as a distinct species.

General Distribution. Circumpolar; all over the Arctic including the northernmost coasts, the "record" being Low Point, 83°6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 232). It was also collected a minute or two of latitude farther south by the late Admiral Godfred Hansen in 1920, near Cape Columbia, Ellesmere.

E. Arctic Distribution. Probably complete on ice-free land except in tracts where the rocks are all highly calcareous.

Occurrence. Generally common in the south and abundant in the north, where it is often dominant over considerable areas on exposed gravel mounds and ridges, sandy flood-plains, and many other habitats. These are the "*Luzula barrens*", characterized by a preponderance of brown tufts of *L. confusa*. As a contrast the species is generally absent from limestone or exclusively dolomitic areas.¹ Also occurs in heathy and other closed communities, and on the driest and most exposed hill and mountain tops, where it frequently attains a higher altitude than any other vascular plant,² being quite one of the hardiest and most ubiquitous species in our area. Flowers and fruits well almost everywhere, but sometimes fails to do so in snowdrift areas, which it frequently penetrates as far in as any phanerogam.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. Discovery Harbour, Hart (K.B) as "*L. campestris*" and "*L. campestris* var. *confusa*"; Hayes Sound, Feilden (K) as "*L. campestris* var. *congesta*"; North side Jones Sound, Wetherill 1894 (G) as "*L. arcuata*", Craig Harbour, Jakeman and Fielder 1923 (O) 111707 as "*L. arcuata*".
2. DEVON, ETC., ISLANDS: c? Devon Island, Cape Sparbo, Anderson 1928 (O); Dundas Harbour, Polunin 1934 and 6; Powell Creek, Lyall 1852 (K). Somerset Island, Port Kennedy, Walker (specimen in Herb. Edinburgh).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Cape Searle, Taylor 1857 (K) as "*L. campestris* var. *congesta*"; Cumberland Gulf, Taylor 1860 (K) as "*L. campestris*", Kingnait, Taylor 1860 (K) as "*L. hyperborea* var. *campestris*", Kekerten, Kumlien (G,N) 1121 as "*L. arcuata*" and "*L. arcuata* var. *hyperborea*".
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Lake Harbour, Malte 1933 (O,G) 126860 as "*L. comosa*", "Big Island" (Rowlee and Wiegand 1897, p. 419, sub nom. *Juncoides hyperboreum*).
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. Cape Chidley, Bell 1884 (O) as "*L. arcuata*", Burwell, Malte 1933 (O,G) 126792 as "*L. comosa*".
8. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Cape Wales, Bell 1884 (B) 2396 as "*L. arcuata*", "Stupart Bay" (Payne ex Lawson 1887, p. 212, sub nom. *L. multiflora*), Sugluk, Malte 1933 (O) 126974 as "*L. comosa*", Wolstenholme, Bell 1885 (B) as "*L. arcuata*", opposite Digges Island, Low 1898 (O) 23042 as "*L. campestris* var. *multiflora*".

¹ Thus it was very rare on Akpatok Island, where it appeared to be limited to the occasional "drumline" of dark acidic material, and my notebooks from other regions frequently contain such remarks as "missed all day on the limestone but found in plenty immediately I came on to dark acidic rocks in the evening".

² Thus on one extraordinarily barren mountain that I recently climbed in southwest Greenland it was the only vascular plant seen above 1,100 m., being found on the very summit (c. 1,500 m.)—cf. Polunin 1938c, p. 91.

9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all the islands, incl. Nottingham Island, Bell 1884 (O,C) 27989 27990 as "*L. arcuata*", 27991 as "*L. spicata*".
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Wager Bay, Macoun 1910 (O, *pars*) 79218.

A small aberrant *Luzula*, which I thought at first must represent a new species, was collected in 1934 at Pangnirtung in Cumberland Gulf (Polunin, No. 501). The same place was under snow when visited again in 1936 and so no more plants or observations could be taken. On closer examination the material turned out to be all much deformed by the smut *Ustilago Luzulae* Sacc., as kindly confirmed for me by Miss Stephens of the British Museum. It may belong to *L. confusa*, although according to Mr. A. J. Wilmott it is more reminiscent of *L. arcuata*; but it is so strikingly different from all known forms of these species and also from *L. spicata* (to a reduced phase of which Prof. Fernald suggested it might perhaps be referable) that I feel prompted to append the following description: Plant small, densely caespitose, with brown fibrous roots and leaves and culms dull brownish above, reddish brown and shining at the base. Leaves linear, 2-4 cm. long, about 1 mm. broad, strongly involute-rounded and hence appearing less than 0.5 mm. broad at least towards the apex; smooth except for occasional long hairs, which are generally loose. Culms many and slender, upright and rigid, 4-8 cm. high, with one or two cauline leaves having blades about 1 cm. long and strongly involute. Inflorescence subcapitate, the flowers being sessile or nearly so. Generally one such glomerule to an axis, subtended by a conspicuous ciliate bract that equals or exceeds the perianth and is ovate below but tapers to a point above. Flowers 2 to 5 in each glomerule; perianth lobes 2-3 mm. long, broadly ovate, membranous and lacerate above, but generally with an acute point. Gynoecium destroyed by fungous attack. Specimen in British Museum.

95. ***Luzula spicata* (L.) DC.**, Fl. Franç. III, p. 161 (1815).
L. nigricans of authors

This species, although very variable elsewhere, seems relatively constant in our area. It does, however, vary considerably in size and luxuriance, the axes being anywhere from 7 to 35 cm. in length; but both of these extremes I have seen closely approached in a single stand of the species near its northernmost limit in our area, and so cannot accept them as being of any real significance. There is also some variation in the ciliation of the bracts.

General Distribution. ? Circumpolar; chiefly alpine and sub- to low-arctic. Northernmost station Revet on Payer Land, 74°25' N. in East Greenland (Gelting 1934, p. 218).

E. Arctic Distribution. Fairly general in northernmost Quebec and Labrador, also stretching northwards in Baffin to Cumberland Gulf, but not yet authoritatively reported from north of the Arctic Circle or west of longitude 79° W. ¹

¹ The tentative report from "Wellington Channel?", already queried by Hooker (1857, p. 118) as "More probably from Disco", is to be discarded.

Occurrence. Generally rather rare and never common enough to be of true vegetational importance. Occurs chiefly among the forbs and grasses that characterize the most favourable and sheltered, south-facing "flower" slopes, and also in the outermost heathy zones of snowdrift areas that are bared relatively early in summer.

4. C. BAFFIN: o. *Cumberland Gulf*, Taylor 1860 (B); "Kingnait and Niatolik" (Taylor 1863, p. 331); Pangnirtung, Polunin 1934 and 6; Kekerten, Taylor 1860 (K).
5. S. BAFFIN: r. *Frobisher Bay*, north of York Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6.
7. N. LABRADOR: o. Burwell, Malte 1928 and 33 (O,G), Polunin 1936; Lady Job Harbour, Potter 1937.
8. N. QUEBEC: f. ? "Cape Wales and Stupart Bay" (Bell ex Macoun 1888, p. 68); Wakeham Bay, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Malte 1928 (O,G,C), Polunin 1936.

96. *Luzula sudetica* (Willd.) DC., Fl. Franç. VI, p. 306 (1815).

L. frigida of authors

L. campestris (L.) DC. var. *alpina* Gaudin

All the material from within our area belonging to the *L. campestris* group has the perianth short and the inflorescence more or less dense, and so is to be referred to the above-named segregate. This is, according to Fernald and Wiegand (1913, p. 43, sub nom. *L. campestris* var. *alpina*), "Little known in North America: the only material seen by us comes from Fullerton, lat. 63° 57', northwest coast of Hudson Bay, J. M. Macoun, No. 79215." These specimens of Macoun's are up to 40 cm. high (most of my others are only 10-20 or sometimes as little as 5 cm. high) and often have the inflorescence compound and noticeably lax; they are peculiar also in having unusually small seeds.

General Distribution. ? Possibly circumboreal—alpine and subarctic regions of western Eurasia and eastern and central North America. Northernmost record, c. 70°N. in Finmark (Norwegian Lapland) (cf. Polunin 1930 and 1933, field notes).

E. Arctic Distribution. Fairly widespread in the mainland regions of the extreme south, both in northernmost Quebec and on the west coast of Hudson Bay, but apparently not reaching the Arctic Archipelago.

Occurrence. Generally only occasional within its limited range, where it nevertheless seems to flower and fruit plentifully, growing chiefly among grasses on favourable, south-facing slopes and sandy flats.

8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Sugluk, Malte 1933 (O) 126994, Polunin 1936; Cape Smith, Polunin 1936.
10. W. COAST HUDSON BAY: o. Fullerton, Macoun 1910 (O,G,C) 79215 as "*L. campestris* var. *sudetica*"; Chesterfield, Gardner 1933 (G) 140.

97. *Juncus trifidus* L., Sp. Pl. ed. 1, p. 326 (1753).

With us this is a "southern" type, apparently eking out a rather precarious existence and sometimes only 5 or 6 cm. high, although more often attaining a height of some 15 cm. It has not previously been recorded from within our area and, occurring as it does in southern Baffin, must also be mentioned as new for the entire American Arctic Archipelago.

General Distribution. ? Possibly circumboreal—Eurasia and eastern North America, but not yet recorded from the North Pacific-Bering Strait region. Chiefly subarctic and alpine, northernmost record c. $71^{\circ} 10' N.$ on Magerøya, off the northwest coast of Scandinavia (Dahl 1934, p. 281).

E. Arctic Distribution. Fairly widespread in the extreme south, including the south coast of Baffin, but not recorded from the west coast of Hudson Bay or from anywhere north of the 63rd parallel.

Occurrence. Rather rare, but in places forming conspicuous tufts. Grows chiefly in dry, heathy areas having a good snow-covering in winter, or on the well-drained side banks of "late snow" depressions.

5. S. BAFFIN: r. Lake Harbour, Malte 1927 (O,G,C), Polunin 1936.

7. N. LABRADOR: r. Burwell, Malte 1928 (O,G,C), Polunin 1934 and 6.

8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Wolstenholme, Polunin 1936; Cape Smith, Malte 1928 (O,G,C).

98. *Juncus arcticus* Willd., Sp. Pl. ed. 4, II, p. 206 (1799).

This is perhaps a "reduced northern phase of" the extremely variable *J. balticus*, but, although where the ranges meet it grades into those forms of the latter species that have a more dense and few-flowered inflorescence of larger flowers, it is generally to be distinguished also by the darker and more conspicuous capsule and by other features that leave but little room for doubt that it should be maintained as a distinct species.

Juncus arcticus was long ago reported by Taylor (1863, p. 331) from Baffin, and this record was accepted by Ostenfeld (1902, p. 24) but ignored or discredited by most subsequent writers. Thus Simmons (1913, p. 65), unable to find any specimens in Taylor's collections, was "at a loss to make out what Taylor has meant." However, now that the plant has been found growing plentifully on Southampton Island and at Lake Harbour on the south coast of Baffin, as well as in many places on the mainland to the south and west, it appears that Taylor's records may after all be correct, even if one of them extends the range of the species in Baffin nearly ten degrees of latitude to the north.

General Distribution. ? Possibly circumpolar—so far known from Europe, western Asia, Greenland, and eastern and central North America, but not yet recorded from the North Pacific-Bering Strait region. Chiefly alpine and sub- to rather low-arctic; northernmost record Nathorstalen in Dickson Bay, $78^{\circ} 45' N.$ in Spitsbergen (Lid 1925, p. 315).

E. Arctic Distribution. Very widespread in the extreme south, including the southernmost parts of the Arctic Archipelago, but not with certainty recorded north of the 65th parallel (See above).

Occurrence. Generally only rare to occasional within its limited area, but growing luxuriantly and flowering and fruiting well, often attaining a height of 40 cm., and sometimes forming close pure stands very locally. Chiefly on moist sand and mud along the shores of lakes and rivulets, but also growing in shallow water and on open areas in marshes.

(C. BAFFIN: ? "Midliattwack (Milikdjuak) Islands, Cumberland Gulf, and Scotts Bay" (Taylor 1863, p. 331).)

5. S. BAFFIN: l. Lake Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6.
7. N. LABRADOR: r. Burwell, Polunin 1934 and 6.
8. N. QUEBEC: r. Cape Smith, Malte 1928 (O,G,C), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1934.
10. W. COAST HUDSON BAY: l? Chesterfield, Malte 1928 (O,C), Gardner 1933 (G), Polunin 1936.

99. *Juncus biglumis* L., Sp. Pl. ed. 1, 328 (1753).

One of the most characteristic of all arctic phanerogams, this species appears to vary little in any features that are of true taxonomic importance. However, in size and robustness it is liable to show great extremes in different habitats almost anywhere within our area, varying from 2 to 30 cm. in height, with the culms sometimes stout and sometimes very slender. It is also variable in the length and prominence of the spathe that subtends the flowers, this being generally longer in plants growing under favourable conditions, but often varying considerably on different culms coming from the same tuft.

General Distribution. Circumpolar; all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 232).

E. Arctic Distribution. With little doubt complete on ice-free land, but much overlooked and not yet recorded from the mainland of Melville Peninsula or some other smaller tracts of country.

Occurrence. In the south generally common and in the north abundant on all swampy freshwater areas that are not too overgrown with ranker species. Rarely absent from any marsh, and especially common on open, muddy soils in the north; hence characteristic of "polygons" and little-vegetated, periodically inundated areas, which it may dominate—although it is generally small and so insignificant as to be scarcely ever collected by amateurs. Most commonly 8-10 cm. high, but often larger even in northern Ellesmere.

1. ELLESMERE: c. everywhere—numerous records from almost all localities.
2. DEVON, ETC., ISLANDS: c. *Devon Island*, "Mount Belcher, Cape Vera, and West Fiord" (Simmons 1909b, pp. 7-9); Dundas Harbour, Malte 1927 (O,C), Polunin 1934 and 6; "Powell Creek and 'Wellington Channel'" (Lyall ex Hooker 1857, p. 118). *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T,K) as "*J. triglumis*." *Somerset Island*, Parry (B); "Fury Beach" (Markham 1874, p. 295); "Port Kennedy" (Walker ex Hooker 1861, p. 84).
3. N. BAFFIN: c. Pond Inlet and near, Mathiassen 1923 (C), Malte 1927 (O,G,C), Polunin 1934 and 6, Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O,G), Polunin 1936.
4. C. BAFFIN: c. Clyde, Polunin 1934 and 6; Cape Searle, Taylor 1860 (K,B). *Cumberland Gulf*, Pangnirtung, Malte 1927 (O,G,C), Polunin 1934 and 6.
5. S. BAFFIN: c. *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Cape Dorset, Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: c? Igloolik, Parry (B).

7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G); Burwell, Malte 1927 (O,G), Porsild 1930 (O*), Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G).
 8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936; Wakeham Bay, Malte 1928 and 33 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Polunin 1936.
 9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B*¹). *Southampton Island*, South Bay, Malte 1928 (O), Sutton 1930 (G), Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).
 10. W. COAST HUDSON BAY: o? Chesterfield, Polunin 1936.
100. ***Juncus albescens*** (Lange) Fernald in *Rhodora* XXVI, p. 202 (1924).
J. triglumis of American authors

In view of the observations of Sørensen (1933, pp. 159 *et seq.*) and other recent writers on the flora of East Greenland, it is not without some slight hesitation that I maintain this as a species distinct from the otherwise circumpolar *J. triglumis* (cf. Fernald 1924b, pp. 201 *et seq.*, and 1933, p. 236 and Pl. 249). Sørensen (1933, p. 161) finds that the "characters vary within wide limits so that in reality all transitional forms are established"; but it seems on one hand somewhat doubtful whether the true *albescens* element occurs in East Greenland, and on the other rather dangerous to identify it with the East Greenland *J. triglumis* var. *Cope-landii* Buchen. (which Lange (1880, p. 123), in erecting his β *albescens*, considered distinct), and to take up Buchenau's name for it in the manner of Sørensen. Throughout most of their total area *J. triglumis* and *J. albescens* are more distinct. That they represent two separate but very closely related species seemed to me more nearly certain during a recent expedition in southwest Greenland, where they were sometimes to be seen actually growing together; nevertheless, it must be noted that they vary considerably in most of the characters on which they are generally separated.

In spite of the relative abundance and extremely wide distribution of its segregate within our area (See below), no form belonging to the *J. triglumis* group had until recently been recorded from any part of the Arctic Archipelago.

General Distribution. Across North America from Alaska to West Greenland and perhaps East Greenland. Chiefly alpine and rather low-arctic, but persisting as far north as Fram Fiord, 76° 22' N. on the south coast of Ellesmere (Simmons 1899, No. 1612—specimen in Herb. Copenhagen, mixed with *J. biglumis*) and, if the East Greenland plant is the same, perhaps to Danmarks Havn, 77° 40' N. (cf. Ostenfeld and Lundager 1910, p. 8).

E. Arctic Distribution. General in the south and widespread northwards to southern Ellesmere; not yet recorded from Melville Peninsula, but doubtless overlooked there as it frequently is elsewhere.

Occurrence. Very common in the extreme south, but only occasional north of the Arctic Circle, where its place is largely taken by the earlier flowering and otherwise better adapted *J. biglumis*. Like this species,

¹ Specimens unfortunately mislaid.

with which it is often associated, it grows chiefly in rather open areas of damp mud or clayey soil. Rarely more than 15, and often only 5-10 cm. high, it is insignificant except when flowering, and hence rarely to be found in the collections of amateurs even from areas where it is plentiful.

1. ELLESMERE: r. Fram Fiord, Simmons 1899 (C, *pars* with *J. biglumis*) *fide* M. P. Porsild.
2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Malte 1927 (O), Polunin 1934.
3. N. BAFFIN: r. Pond Inlet, Polunin 1934.
4. C. BAFFIN: r. Pangnirtung, Polunin 1934 and 6.
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1928 (O,G,C), Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
7. N. LABRADOR: c. Burwell, Malte 1927 and 8 (O,G,C), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G); Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Wakeham Bay, Malte 1933 (O), Polunin 1936; Sugluk, Malte 1933 (O), Polunin 1936; Wolstenholme, Malte 1928 (O,G,C), Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c? Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Malte 1928 (O) 120694, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: c. Wager Bay, Macoun 1910 (O, *pars* with *Luzula confusa*) 79218; Fullerton, Macoun 1910 (O,G,N) 79213; Chesterfield, Malte 1928 (O,G,C), Polunin 1936, (Gardner 1937, p. 33); Rankin Inlet, Macoun 1910 (O,G,N,C) 79214.

101. *Juncus castaneus* Smith, Fl. Brit. I, p. 383 (1800).

All the material of this species that I have seen from within our area is referable to the typical form. Apart from a well-marked colour phase, which occurs only to the south, the plants seem to be reasonably constant in everything except size; for although they are generally about 20 cm. high they may vary even beyond the common limits of 10-30 cm.

General Distribution. Circumpolar; alpine and arctic, including high latitudes but not the farthest north coasts. Northernmost record Isfjord, c. 78° 30' N. in Spitsbergen (Resvoll-Holmsen 1927, p. 32).

E. Arctic Distribution. General south of the Arctic Circle and widespread northwards to Devon Island. Apparently absent from Ellesmere and not yet reported from Melville Peninsula.

Occurrence. Fairly abundant in the extreme south and common northwards to the Arctic Circle, but rare north of that. Grows chiefly on moist sand and clay around the shores of lakes and rivulets and in open spots in marshes, especially where there is standing water early in the summer. More rarely in better drained, grassy areas.

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1934 and 6.
3. N. BAFFIN: r. Arctic Bay, Polunin 1936.
4. C. BAFFIN: f. *Cumberland Gulf*, "various places" (Taylor 1863, p. 331); Pangnirtung, Polunin 1934 and 6; Kekerten Island, Taylor 1860 (K,B); Nettilling Lake, Soper 1925 (O,N).
5. S. BAFFIN: c. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1928 (O,G), Polunin 1934 and 6; Cape Dorset, Malte 1928 (O,C), Polunin 1934 and 6.
7. N. LABRADOR: c. Burwell, Malte 1927 (O,G,C), Johansen 1927 (C), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G).

8. N. QUEBEC: c. Payne Bay, Ney and Courtright 1936; Wakeham Bay, Malte 1928 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G), Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f? Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Malte 1928 (O,G,C), Polunin 1936; Coats Island, Forsild 1930 (O*).
10. W. COAST HUDSON BAY: c. Chesterfield, Freuchen 1923 (C, *pars* with *Equisetum arvense*) 712a, Malte 1928 (O,G,C), Sutton 1930 (G); Gardner 1933 (G), Polunin 1936; Rankin Inlet, Macoun 1910 (C); Cape Eskimo, Birket-Smith 1923 (C).

LILIACEAE

102. *Tofieldia borealis* (Wahlenb.) Wahlenb., Fl. Lapp., p. 89 (1812).*T. minima* (Hill) Druce*T. palustris* of authors

Although Hill's *Phalangium minimum* was published as early as 1756, it was a mere chance binomial and, with Druce's transfer, has to be discarded. Moreover, as Mr. J. E. Dandy kindly pointed out to me, Hudson's name (*T. palustris*) for this plant is also illegal,¹ being based on a complete misconception; the earliest valid name for the species is that of Wahlenberg used above.

Tofieldia borealis in the extreme south of our area may have the normally subcapitate inflorescence drawn out into a raceme as much as 2 cm. long, but otherwise its variations seem limited to the minor characters of size and robustness. Generally it is very small, between 5 and 12 cm. high and with leaves 1-3 cm. long, but occasionally in sheltered places it may be taller, or have leaves as much as 5 cm. long.

General Distribution. Circumpolar; alpine and arctic. Northernmost record Kongsfjord, c. 79° N. in Spitsbergen (Polunin 1933, field notes—specimens in British Museum and Fielding Herbarium, Oxford).

E. Arctic Distribution. Probably general south of the Arctic Circle, but not fully confirmed north of the 65th parallel, as the old records (like some of my specimens without flowering axes) may perhaps belong to the next species; at any rate it appears to be absent north of Lancaster Sound.

Occurrence. Generally common in the extreme south, but nowhere really abundant. Grows chiefly in marshy lowlands and moist depressions in the heath, but also occurs in well-drained grassy areas and on the dry tops of the moss hummocks of "hillock tundra".

(C. BAFFIN: ? "Scotts Bay and Cape Searle" (Taylor 1863, p. 331). "*Cumberland Gulf*" (Kumlien 1879, p. 165), (Giese ex Ambronn 1890, p. 88); "King-nait" (Taylor 1863, p. 331).)

5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G), Palmer 1929 (P) 642445; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C) 118595 118596 118597 120283, Soper 1931 (O) 125790, Polunin 1934 and 6; Amadjuak Bay, Soper (O) 125985; between Amadjuak and Tcharkbach Fiords, Bell 1897 (O); Cape Dorset, Polunin 1936.

7. N. LABRADOR: 1? Burwell, Borden 1904 (O), Malte 1928 (O,G) 119987, Polunin 1934 and 6.

¹ I must apologize for my recent oversight in using this name (in *Jour. of Botany* LXXVII, p. 274 (1939)).

8. N. QUEBEC: c. Wakeham Bay, Johansen 1927 (C) 1141, Malte 1928 and 33 (O,G) incl. 120263, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; opposite Digges Island, Low 1898 (O); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Malte 1928 (O,G,C) 120631, Sutton 1930 (G), Polunin 1934 and 6.
10. W. COAST HUDSON BAY: f. Fullerton, Macoun 1910 (C,N); Chesterfield, Malte 1928 (O,G) 120497 120512, Polunin 1936.

103. **Tofieldia coccinea** Richardson in Franklin, Narr. 1st Jour., App., p. 736 (1823).

This species is well known in western North America and in Greenland, but does not appear to have been recorded from any other part of eastern North America. However, it was discovered on Devon Island by the late Dr. Malte in 1927, and in 1936 I found it in northern Baffin and again far to the south on the mainland of Quebec. It must be noted as new also for the entire Arctic Archipelago.

General Distribution. From East Greenland across arctic America to northern Asia. Northernmost record 77° 47' N. (?) in Inglefield Land, West Greenland (cf. Ostenfeld 1925, p. 10). This must be queried; but the species certainly reaches Cape Amelie, 77° 32' N. in East Greenland (Sørensen ex Seidenfaden and Sørensen 1937, p. 107).

E. Arctic Distribution. Widespread, although so far known only from the mainland of Quebec, two localities in northern Baffin, and the south coast of Devon Island.¹ Apparently absent from Ellesmere and not yet recorded from several of our major districts, where it may, however, have been overlooked.

Occurrence. Apparently rare, or at least sporadic in appearance. Grows in close tufts in heaths or on rather exposed ridges of more or less open, mineral soil. Thus, generally inhabiting drier areas than the preceding species, with which I have never yet seen it mixed.

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Malte 1927 (O,C) 118594, Polunin 1934? and 6.
3. N. BAFFIN: o. Pond Inlet, Polunin 1934? and 6, Bazin 1935 (O,M); Arctic Bay, Polunin 1936.
8. N. QUEBEC: r. Wakeham Bay, Polunin 1936.

ORCHIDACEAE

104. **Habenaria obtusata** (Pursh) Richardson in Franklin, Narr. 1st Jour., App., p. 750 (1823).

Platanthera obtusata (Pursh) Lindl.

Lysiella obtusata (Pursh) Rydberg

All the material belonging to this species from within our area, like that from Churchill and Port Harrison not far to the south, is referable to the reduced northern

var. **collectanea** Fernald in *Rhodora* XXVIII, p. 175 (1926).

¹ The report by Dickie (*Proc. Linn. Soc., Botany*, XI, p. 33) of "*Tofieldia palustris* var. *borealis*" from Philpotts Island, slightly farther north on the east coast of Devon Island, most likely belongs to *T. coccinea*.

This is described as "racemo 1-4.5 cm. longo floribus approximatis vel subapproximatis..." Within our area, where it appears to extend much farther to the northeast than anywhere else, it is especially small, the scapes being generally only 4-5 cm. high and apparently never more than 10 cm. high. It is curious that this, the only orchid in our area, should be absent from Greenland, where several other members of the great family are widely distributed.

General Distribution. The whole species extending across the mainland of North America from Labrador to Alaska, south to New York, Minnesota, and Colorado. Northernmost record somewhere around 66° N. on Great Bear Lake (Richardson ex Hooker 1840, II, p. 196).¹

E. Arctic Distribution. Apparently limited to the mainland of Quebec in the extreme south, and so far known only from two closely adjacent localities just within our area on the east coast of Hudson Bay.

Occurrence. Rare even within its extremely limited range. Grows gregariously among the thick mosses of favourable heathy areas, flowering plentifully but remaining so dwarfed as to project scarcely at all above the surface layer of cryptogams. All var *collectanea*:

8. N. QUEBEC: r. Mosquito Bay, Low 1898 (O) 23048; Cape Smith, Polunin 1936.

DICOTYLEDONEAE

SALICACEAE

105. *Salix reticulata* L., Sp. Pl. ed. 1, p. 1018 (1753).

As pointed out by Schneider (1919, p. 44), this seems to be the most widely ranging of all willows. Described by Linnaeus as "*Salix foliis integerrimis glabris ovatis obtusis*", it nevertheless shows in these characters a considerable range of variation not only in the outside world but also in our area, with the result that numerous varieties and forms have been erected around it. Examples of several of these are recognizable in our area, but scarcely seem worth upholding if indeed they are truly separable. They include:

(1) A tiny dwarf form with twigs flat-pressed to the ground and only a few centimetres long, the laminae being generally less than 1 cm. long. This is merely a depauperate, high-arctic form occupying most of the more northerly stations of the species in Spitsbergen and with us on Devon Island. It scarcely seems deserving of a name, as on one hand it is to be found in exposed places in the south, and on the other hand immediately approaches the head form in any locally more favourable habitus in the Far North.

(2) A luxuriant form of favourable situations with laminae around 5 cm. long and 3-4 cm. broad.

(3) A form (e.g., Polunin No. 1500) approaching the rather doubtfully separable "western" subsp. *orbicularis* (Anderss.) Floderus.

¹ The report from Kåfjord, 69° 56' N. in Norwegian Lapland (cf. Ames 1910, p. 133), seems to be based on a different species.

(4) A long-trailing, spindly form with the laminae at least twice as long as they are broad. This was especially abundant in one spot inland of Lake Harbour in southern Baffin, and is altogether so striking as to seem worthy of a name:

f. *oblongifolia* n. forma.

Laminis plus minusve oblongis, bis vel ter longioribus quam latis. Type in British Museum: *Nicholas Polunin*, Lake Harbour, Baffin Island, No. 1253, July 27, 1936. Figure on Plate V.

(5) Any of the above forms may, like the head form, have the leaves quite obviously hairy below and sparingly so above, especially when young; they also frequently have the leaves more or less noticeably serrate or crenate, but it seems dangerous to assume that this indicates hybridization with *S. herbacea* or some other species having such characters, as is frequently done. However, my Nos. 825 and 1175 from Akpatok Island probably do represent the hybrid *S. herbacea* x *reticulata* (fide Wilmott).

General Distribution. Circumpolar, except for its remarkable absence from Greenland. Northernmost records in Kongsfjord, c. 79° N. in Spitsbergen (Polunin 1933, field notes—specimen in British Museum).

E. Arctic Distribution. General over the southern two-thirds of its latitude range, but apparently absent from Ellesmere¹.

Occurrence. Very common almost everywhere in the south, but less so towards its northern limit on Devon Island. Has a wide range of tolerance to varying conditions of water, snow-covering, and exposure, thus occurring in a number of different habitats. Especially characteristic of heathy areas having a good snow blanket in winter, and sometimes forming a characteristic zone towards the outside of late-snow patches (cf. Polunin 1934b, p. 387). Elsewhere it is a mere subsidiary component of the vegetation, being generally appressed-creeping and rarely rising more than a few centimetres above the surface of the soil.

2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Soper 1923 (C), Malte 1927 (O,N), Polunin 1934 and 6. "*Somerset Island*, Port Kennedy" (Walker ex Hooker 1861, p. 84).
3. N. BAFFIN: c. *Bylot Island*, Button Point, Wilcox 1928 (O, *pars* with *Ranunculus nivalis*) 125630; west of Qaersut, Freuchen 1924 (C). *Pond Inlet*, (Walker ex Hooker 1861, p. 84), (Borden ex Macoun in Low 1906, p. 321), and seven others (O,M,N,C), incl. Qilalukan, etc., Mathiassen 1923 (O), Freuchen 1924 (O). *Admiralty Inlet*, Strathcona Sound, Soper 1923 (C); Arctic Bay, Malte 1927 (O), Polunin 1936; "Port Bowen" (Ross ex Hooker 1826, p. 128).
4. C. BAFFIN: f? "Scotts Bay" (Taylor 1863, p. 330); Clyde, Polunin 1934. *Cumberland Gulf*, Pangnirtung, Polunin 1934.

¹ Simmons (cf. 1913, p. 74) cannot have known this species or he would not have questioned the early record from Baffin on account of "The close resemblance to this which broadleaved forms of *S. arctica* may assume", and which "always makes an error possible". Actually, *S. reticulata* is quite the most distinct of all willows in the Arctic, with its thick and rounded, exaggeratedly reticulate leaves, which are dark green above and pale-glaucous below.

5. **S. BAFFIN:** c. *Frobisher Bay*, Sewall 1937 (G); Point Brewster, Potter 1937; north of York Harbour, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Malte 1928 and 33 (O,G,N,C), Polunin 1934 and 6 incl. 1253 f. *oblongifolia*; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 420); Cape Dorset, Burwash 1924 (O), Malte 1928 (O) 120379 det. B.F.(loderus) first as "*S. reticulata* x *herbacea*" and then as "*f. serrata*", Polunin 1936 incl. 2376 intermediate and 2377 f. *oblongifolia*; Bowdoin Harbour, Robinson 1922 (G).
6. **MELVILLE PENINSULA:** f. Duckett Cove, Parry (B); Lyon Inlet, Parry (B). *Vansittart Island*, Freuchen 1922 (N); Danish Island, Freuchen 1922 (C); Georgina Island, Freuchen 1922 (C).
7. **N. LABRADOR:** f. "*Chidley Peninsula*" (MacGregor ex anon. 1907, p. 83); Burwell, Hantzsch 1906 (D*), (Borden ex Macoun in Low 1906, p. 321), Malte 1928 and 33 (O,G,N), Polunin 1931, 4, and 6; Grenfell Tickle, Potter and Brierly 1934 (G, pars with *Epilobium latifolium*).
8. **N. QUEBEC:** c. Payne Bay, Ney and Courtright 1936; Wakeham Bay, Johansen 1927 (O), Malte 1927 and 8 (O), Polunin 1936; Sugluk, Polunin 1936 incl. 1500 apprg. subsp. *orbicularis*; Wolstenholme, Polunin 1936; Cape Smith, Polunin 1936.
9. **ISLANDS IN HUDSON, ETC., BAYS:** c. Akpatok Island, Polunin 1931 (B) incl. 825 1175 apprg. *S. herbacea*; Salisbury Island, Buchan 1938; Nottingham Island, Bell 1884 (B), Johansen 1927 (C); Mansel Island (Bell ex Macoun 1886, p. 454), Leechman 1936. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 193); York Bay, Mathiasen 1922 (C); South Bay, Sutton 1930 (G), Manning 1934, Polunin 1934 and 6; Nuwoodlik Hills, Baird 1936; Coats Island, Porsild 1930 (O*).
10. **W. COAST HUDSON BAY:** f. Chesterfield, Polunin 1936; Rankin Inlet, Macoun 1910 (N) 79146 as "*S. orbicularis*"; Tikerarjuaq south of Eskimo Point, Birket-Smith 1923 (C).

106. *Salix vestita* Pursh, Fl. Am. Sept. II, p. 610 (1814).

This most handsome and distinctive species was long ago reported by Taylor (1863, p. 331) from Baffin, but there can be little doubt that the record should be transferred to another species. For this Simmons (1913, p. 73) suggested *S. reticulata*, but, having seen in the Kew Herbarium a specimen of *Salix arctica* Pall. labelled by Taylor "*S. vestita* Pursh E. Side" (i.e., of Baffin Bay and hence from Greenland), I am inclined to think that *S. arctica* must have been meant instead. However, *S. vestita*, long known to be plentiful in Labrador and elsewhere only a little south of our area, has now been confirmed as occurring within it—on Akpatok Island, which is to be counted as part of the "Arctic Archipelago".

General Distribution. North America: from Akpatok Island and northern Labrador southwards to the regions surrounding the Gulf of St. Lawrence and westwards to British Columbia and Oregon. Northernmost record c. 60° 30' N. on Akpatok Island (Polunin (1934, p. 204)—specimens in British Museum).

E. Arctic Distribution. Known only from Akpatok Island in Ungava Bay.

Occurrence. Rare even on Akpatok, where it occurs in sheltered valleys that have a good snow-covering in winter, growing best in damp "late-snow" depressions, but even then remaining more or less prostrate.

9. **ISLANDS IN HUDSON, ETC., BAYS:** r. Akpatok Island, Polunin 1931 (B).

107. *Salix Uva-ursi* Pursh, Fl. Am. Sept. II, p. 610 (1814).*S. Cutleri* Tuckerm.*S. Myrsinites* L. var. *parvifolia* Lange

The range of this attractive little species is given by Schneider (1919, p. 51), and I have nothing to add except a possible extension somewhat farther north in Baffin, based on a specimen from Cumberland Gulf that seems to be intermediate between this species and *S. arctophila*. Besides this tendency to grade right into *S. arctophila* in the manner described below, *S. Uva-ursi* varies in our area considerably in habit, which although typically so compact that the matted axes hold a close mass of dead leaves, etc., may yet be quite loose and long-trailing. This is especially the case in the more favourable and less dry and exposed situations, where the plants grow among other vegetation. The species also varies in the amount of serration on the leaf margins, and in the size of the female catkins.

General Distribution. Limited to eastern North America; chiefly alpine and subarctic, extending from West Greenland through southern Baffin to the east coast of Hudson Bay, and thence southwards to northern New England and New York. Northernmost record Ritenbenk, 69° 45' N. in West Greenland (Porsild 1920, p. 65).

E. Arctic Distribution. Limited to the eastern half of the extreme south, being general in the mainland regions of northern Quebec and Labrador, and extending to the south coast of Baffin and possibly to Cumberland Gulf.

Occurrence. Within its limited range fairly common in exposed rocky places, being especially characteristic of small glacial deposits containing a plentiful admixture of calcareous material. Here its very dense mats, which are often a metre or more in diameter, may form a conspicuous feature of the otherwise poor vegetation (cf. Fernald 1916, p. 52).

(C. BAFFIN: ? See below.)

5. S. BAFFIN: f. *Frobisher Bay*, York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O,N), Polunin 1934 and 6; "White Strait" (Tarr ex Rowlee and Wiegand 1897, p. 419); Cape Dorset, Polunin 1934.

7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Burwell (Borden ex Macoun in Low 1906, p. 321), Macoun 1910 (G,N,C), Johansen 1927 (C), Malte 1928 and 33 (O,G,N,C), Polunin 1934 and 6; Bowdoin Harbour, Potter 1937.

8. N. QUEBEC: f. *Wakeham Bay*, Johansen 1927 (C), Malte 1933 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6.

Salix inter *Uva-ursi* et *arctophila*¹

In damper and more favourable lowland habitats than the exposed rocky ones generally graced by *S. Uva-ursi*, there occur frequently in the south of our area luxuriant forms of this species with long trailing axes and larger leaves. These are very reminiscent of, and indeed grade right into, forms of *S. arctophila* (q.v.). One such specimen has been collected as far

¹ Cf. footnote 2 on p. 131.

north as Kekerten Island, Cumberland Gulf (Soper No. 132144), and is the basis of the rather doubtful report of *S. Uva-ursi* from this region. Besides their intermediate position between the two species in vegetative characters, these specimens may also have catkins of an intermediate size and shape, and may well represent the hybrid *S. arctophila* x *Uva-ursi*, as some have been designated on the labels.¹ The following specimens, belonging to what I prefer for the time being to call this "intermediate" category, have been found in our area:

C. BAFFIN: *Cumberland Gulf*, Kekerten Island, Soper 1924 (O) 132144 det. B.F.(loderus) as "*S. arctica* x *Uva-ursi*".

S. BAFFIN: Lake Harbour, Malte 1927 (O) 118634, Polunin 1934 and 6, Nos. 326 433 1117 1212; ? "White Strait" (Tarr ex Rowlee and Wiegand 1897, p. 419, as "form b").

N. LABRADOR: Burwell, Malte 1928 (O) 120124 120126 det B.F.(loderus) as "*S. arctophila* x *Uva-ursi*" and "*S. chloroclados* x *Uva-ursi*", Polunin 1936 No. 1097.

N. QUEBEC: Wakeham Bay, Polunin 1936 No. 1440.

108. *Salix herbacea* L., Sp. Pl. ed. 1, 1018 (1753).

This species in our area varies markedly in luxuriance, the rounded leaves being anywhere from less than 0.4 to 2.5 cm. in diameter. It also varies in the depth and prominence of the serrations on the leaf margins, but not sufficiently to warrant the separation of any varieties or even forms. Schneider's statement (1919, p. 52) that "It has almost exactly the same range as *S. Uva-ursi*" must be pointed out as being entirely at variance with the facts at present known, for even in North America it is far more widespread in all directions except the northern United States.

General Distribution. Arctic and alpine regions of Europe and eastern North America. Northernmost record 78° 20' N. in West Greenland (Ekblaw 1914, Crockerland Expedition—specimen in Gray Herbarium).

E. Arctic Distribution. Probably complete all over the southern half and fairly general northwards to Devon Island, but apparently absent from Ellesmere.

Occurrence. Generally abundant except towards the northern limits of its range, though little collected owing to its diminutiveness. Always dwarf, with feebly ligneous, creeping branches, seldom rising more than 3-5 cm. above the surface of the ground—except when they grow around or over stones. Nevertheless, the species is often conspicuous because of its gregariousness. Grows best in well-drained areas having a deep snow-covering in winter; hence particularly characteristic of late-snow patches, in which it frequently dominates a well-marked zone between the outer heaths and the inner, sparse herb communities (cf. Polunin 1934b, p. 388). However, in the south it occurs in a wide range of habitats, including dry, sandy areas, herb slopes and grassy meadows, and sometimes even marshes.

¹ Such intermediate specimens appear to be absent from southwest Greenland, where both species are fairly plentiful (Polunin 1937, field and herbarium notes).

Flowers abundantly within a few days of being left bare of snow, and thereafter ripens fruit very rapidly. Is generally the first shrubby plant to have its leaves turn brown and fall off in autumn, and hence a pretty herald of seasonal changes.

2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Polunin 1934 and 6; Powell Creek, Lyall 1852 (K).
3. N. BAFFIN: o. Pond Inlet and near, Freuchen 1924 (O), Polunin 1934 and 6, Bazin 1935 (O,M); Tulukan, Mathiassen 1923 (C); Arctic Bay, Dutilly 1936.
4. C. BAFFIN: c. Clyde, Polunin 1934 and 6; "Kivitung" (Boas ex Ambronn 1890, p. 98); "Exeter Sound" (Seidenfaden 1932, p. 13). *Cumberland Gulf*, "common" (Taylor 1863, p. 331), (Boas, Giese ex Ambronn 1890, pp. 86 and 98); 'Quickstep Harbour', Kumlien 1878 (G,N); Pangnirtung, Soper 1923 (C), Malte 1927 (O,N), Polunin 1934 and 6, Turner 1935 (K); Kekerten Island, Soper 1924 (O).
5. S. BAFFIN: c. Signuia near Cape Haven, Schuchert and White (O, *pars* with *Koenigia islandica*). *Frobisher Bay*, Sewall 1927 (G); Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Johansen 1927 (C), Malte 1933 (O,G) *pars* with *Cassiope hypnoides*, Polunin 1934 and 6; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 419); Cape Dorset, Malte 1928 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: c? Duckett Cove, Parry 1821 (B,C¹). *Vansittart Island*, Georgina Island, Freuchen 1922 (C).
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K) as "S. polaris"; Cape Chidley, Bell 1884 (O, *pars* with *Arenaria sajanensis*) 4878; Burwell (Borden ex Macoun in Low 1906, p. 321), Malte 1928 and 33 (O,G,N), Polunin 1931, 4, and 6.
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936; Payne Bay, Ney and Courtright 1936; Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Johansen 1927 (C), Malte 1928 (O), Polunin 1934 and 6; Digges Island, Bell 1885 (B); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Salisbury Island, Buchan 1938; Nottingham Island, Bell 1884 (N), Johansen 1927 (C). *Southampton Island*, White Island, Mathiassen 1922 (C); South Bay, Polunin 1934 and 6; Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: c. Roes Welcome south of Wager Bay, Freuchen 1922 (C); Fullerton, Macoun 1910 (C); Chesterfield, Malte 1928 (O), Sutton 1930 (G), Polunin 1936, (Gardner 1937, p. 36); "Mouth of Maguse River" (Güssow 1933, p. 117); Cape Eskimo, Macoun 1910 (N).

***Salix herbacea* x *Uva-ursi* (*S. Peasei* Fernald).**

A single collection of this peculiar plant was made in 1936 by the Rev. Father Dutilly on Fairway (Farewell) Island near Chesterfield, which lies well within our area on the west coast of Hudson Bay. Professor Fernald and Dr. Raup have kindly verified my preliminary determination of the material.

A specimen in the Copenhagen Herbarium from Tikerarjualaq, somewhat farther south on the west coast of Hudson Bay, collected by Kaj Birket-Smith in 1923 during the Danish Fifth Thule Expedition and published by Grøntved (1936, p. 34) as "*Salix* (arctica Pall. x) *S. stolonifera* Cham.," seems also to belong here.

¹ I have also seen a Parry specimen from Duckett Cove in Herb. Edinburgh.

Salix polaris Wahlenb.

This is mentioned by Hooker (1861b, p. 301) and some others (e.g., Macoun 1886, p. 453) from "Islands north of Lancaster Sound," but, as already pointed out by Simmons (1913, p. 73), this statement is founded on specimens belonging to other species, *S. polaris* being unknown from America except from the extreme west.¹

109. *Salix arctica* s.l. (Pall., Fl. Ross. I, 2, p. 86 (1788)).

S. Brownei Lundstr.

S. anglorum Cham. (*S. arctica* R. Br.)

The distinction between Pallas' western *S. arctica* and Chamisso's eastern *S. anglorum* is so poor that I have, although not without some hesitation, combined them under the older name. Thus Camillo Schneider (1918, pp. 118 *et seq.*), after an exhaustive review of the question, finally comes down to a single criterion, the presence or absence of stomata on the upper surface of the leaf, as the only means of telling the head forms apart, although *S. anglorum* has phases which "seem not to possess stomata in the upper leaf surface," when their presence should differentiate this "species" from *S. arctica* s.str. Now, from the abundant material before me, I can see that both the eastern and western plants vary within wide limits and very similarly, and, especially with the advice of such experts as Professor M. L. Fernald and Dr. Hugh M. Raup that they are "at most varietally distinct," I have few qualms about uniting them under the same name, which is, moreover, that used by Simmons and most recent writers on the flora of Greenland. Certain "specialist" writers on Greenland and Eurasia have preferred to set aside the type as a "pure species," and use multiple hybrid names not for certain examples but actually for the majority of the plants that I am here calling *Salix arctica*.² The innumerable forms from within our area of this almost ubiquitous series, which already in Ellesmere alone gave Simmons (1906, pp. 130 *et seq.*) considerable trouble, I am accordingly "lumping" under a single common name, with the exception of one very marked variety which seems worthy of retention, viz.,

var. **kophophylla** (Schneider) Polunin in Jour. Bot. LXXVII, p. 271 (1939).

(*Salix anglorum* Cham. var. *kophophylla* Schneider)

This differs from the typical form in its "firmer, more rounded, and soon glabrous leaves and the glabrate twigs". The laminae are not infrequently cordate, and as much as 6.5 cm. long. This variety shows plentiful gradations into the typical form, but is to be found in its full development throughout the southern part of our area, and occasionally northwards to the shores of Lancaster Sound.

¹ *Salix polaris* has also been reported from Chidley Peninsula (anon. 1907, p. 83), but the material clearly belongs to *S. herbacea*—See p. 156.

² I am following most recent writers in treating as belonging to the one major series *S. arctica* s.l. all the material returned by Dr. Floderus as the triple hybrid *S. arctica* x *arctophila* x *glauca*.

General Distribution. The species nearly circumpolar, but apparently absent from northeastern Europe. Chiefly arctic; northernmost record Frederick E. Hyde Fiord, 83° 15' N. on the north coast of Greenland (Colonel I. P. Koch ex Ostenfeld and Lundager 1910, p. 16).

E. Arctic Distribution. Doubtless complete on ice-free land.

Occurrence. Almost everywhere one of the most abundant and important plants, and in the Far North generally the largest. Always more or less prostrate, with branches generally creeping and closely appressed to the ground, and gnarled and twisted—but sometimes exceeding a yard in length and an inch in diameter. The species has a remarkably wide range in water, exposure, and snow-covering tolerance, growing, as Simmons (1906, p. 131) remarks, "in almost every locality, very differently developed according to the nature of the habitat." It rarely forms luxuriant growths except very locally along the banks of streams, but nevertheless is of great ecological importance, especially as a component of the heath and drier marsh associations, and as the only plant able really to take hold of many wind-eroded ridges and screes. Here it spreads over the more or less dynamic surface and binds it, depositing humus, conserving water, and providing conditions favourable for the ecesis of other plants—first of all in its own patches and then in the areas that lie between.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. *Grant Land*, 82° 27', Wolf 1906 (N) as "*S. groenlandica*"; Bache Peninsula, Malte 1927 (N) several Nos. det. B.F.(loderus) as "*S. callicarpaea*", etc., Fram Harbour, Simmons 1899 (K,C) 683 as "*S. arctica* var. *groenlandica*."
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. *Devon Island*, Dundas Harbour, Malte 1927 (O,N,C) several Nos. det. B.F.(loderus) as "*S. arctica* x *callicarpaea*", etc., Beechy Island, Malte 1927 (O) 118608 118609 det. B.F.(loderus) as "*S. callicarpaea*" and "*S. arctica* x *callicarpaea*"; *Cronwallis Island*, Assistance Bay, Sutherland 1851 (K) as "*S. cordifolia*."
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Pond Inlet and near, Mathiassen 1923 (C) 783 784 796 as "*S. arctica* x *pulchra*" and "*S. arctica* x *Barclayi*", Freuchen 1924 (O) 859 as "*S. arctica* x *pulchra*", Malte 1927 (O,C) 118614 118616 118633 118703 det. B. F. (loderus) as "? *S. arctica* x *callicarpaea*" and "*S. callicarpaea*" and "*S. arctophila* f. *leiocarpa*=*S. chloroclados*", Bazin 1935 (O,M) incl. var. *kophophylla*, Arctic Bay, Malte 1927 (C) incl. 118613 118627 118631 118632 as "*S. callicarpaea*", Polunin 1936 incl. var. *kophophylla*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Malte 1927 (O) 118619 det. B.F.(loderus) as "*S. callicarpaea*"; *Cumberland Gulf*, Kumlien 1878 (N) as "*S. glauca*"¹, (Giese ex Ambrohn 1890, p. 86, sub nom. *S. groenlandica*), Pangnirtung, Malte 1927 (C) 118693 118694 as "*S. callicarpaea*", Polunin 1934 incl. var. *kophophylla*, Kingua, Soper 1924 (O) incl. 132187 var. *kophophylla*, Blacklead Island, Soper 1924 (O) incl. 132195 var. *kophophylla*.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Lake Harbour, Malte 1933 (G) incl. 126904 var. *kophophylla* as "*S. cordifolia*", Polunin 1934 incl. var. *kophophylla*, Cape Dorset, Malte 1928 (O,C) incl. 120388 120400 120402 det. B.F.(loderus) as "? *S. arctophila* x *callicarpaea*" and "*S. callicarpaea*", Polunin 1936 incl. var. *kophophylla*.

¹ Scr. Camillo Schneider "The name of the collector is Krumlein".

Scr. P. A. Ryberg "No Sir."

6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities, incl. *Vansittart Island*, Danish Island, Freuchen 1922 (C) 259b as "*S. stolonifera* f." and 259c as "*S. glauca* x *pulchra* ?" scr. Enander.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. Burwell, Malte 1928 and 33 (O,G) incl. 120170 120172 126816 var. *kophophylla* incl. det. B. F.(loderus) as "*S. anglorum* var. *kophophylla* x *callicarpaea*", Polunin 1931, 4, and 6 incl. var. *kophophylla*.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Wakeham Bay, Malte 1927 (C) incl. 118657 as "*S. callicarpaea*", Wolstenholme, Polunin 1934 incl. var. *kophophylla*, Cape Smith, Malte 1928 (O,N) det. B. F.(loderus) as "*S. callicarpaea*", Polunin 1936 incl. var. *kophophylla*.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from all the major islands, incl. Akpatok Island, Polunin 1931 (B) incl. var. *kophophylla*.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Chesterfield, Freuchen 1923 (O,C) 734 as "*S. arctica* x *reptans*", Malte 1928 (O) incl. 120416 det. B. F.(loderus) as "*S. callicarpaea*" and 120566 var. *kophophylla* det. B. F.(loderus) as "*S. arctophila*."

Salix inter arctica et arctophila

Almost throughout the southern quarter of our area there occur, in general rather sparingly, specimens that may perhaps result from hybridization of *S. arctica* with *S. arctophila*. At least in the characters of the leaves (which are narrow and often obscurely serrate, slightly shiny above and essentially glabrous below except when young), the rather large upright female catkins with very dark, rounded scales, and the long trailing branches whose young twigs are characteristically yellowish or green and somewhat inflated below the nodes, they are not to be referred absolutely to either species, but in many senses occupy a position intermediate between the two. I accordingly cite the following specimens from within our area:

- C. BAFFIN: *Cumberland Gulf*, Pangnirtung, Soper 1924 (O) 132202 det. B.F. (loderus) as "*S. arctophila* x *glauca*", Polunin 1934 Nos. 478 479.
 S. BAFFIN: Cape Dorset, Polunin 1936 Nos. 2376 2377.
 N. LABRADOR: Burwell, Johansen 1927 (C) 1222 1223, Malte 1933 (O) 126798 as "*S. anglorum*", Polunin 1936 Nos. 1101 2635.
 N. QUEBEC: Wakeham Bay, Polunin 1936 Nos. 1432 1433.
 W. COAST HUDSON BAY: Chesterfield, Polunin 1936 Nos. 2144 2145 2150 2151 2209.

110. *Salix arctophila* Cockerell apud Heller, Cat. N. Am. Pl., p. 89 (1910).¹

Salix groenlandica Lundstr.

This species, with its especially large and erect pistillate catkins and generally glabrous, denticulate leaves, which are glaucous below and conspicuously shiny-varnished above, seems in its full development to be entirely distinct from *S. arctica* and the other species with which it is frequently confused, and with which it may perhaps hybridize rather frequently (See above). Another character that does not appear to have been stressed is the extreme brittleness of the twigs of *S. arctophila* when dried. The species grows throughout the southern parts of our area, which

¹ I have not been able to check this citation.

indeed constitute the centre of its known field of distribution; but as to whether it occurs in the northernmost parts I have still some slight doubt. Thus I have not myself been able to find any specimens of it growing on Devon or Ellesmere Islands, although it appears from a sheet so named in the Arctic Herbarium at Copenhagen, and another at Kew, that Simmons' "*S. arctica* var. *groenlandica* Anderss." from Ellesmere, which I once thought must be referable here (cf. Simmons 1906, p. 131), belongs instead to the polymorphic series, which in my conception constitutes *S. arctica*. However, there is in the Gray Herbarium a specimen collected by the "Peary Auxiliary Expedition, 1894" on the "North Side of Jones Sound" (i.e., in the extreme south of Ellesmere), which, although not quite typical, seems to belong to *S. arctophila*.

General Distribution. Apparently limited to the eastern half of North America, extending from Greenland and the Arctic Archipelago westwards to Great Slave Lake (Raup 1936b, p. 230) and southwards to Labrador and the regions around the Gulf of St. Lawrence. Northernmost record probably c. 76° N. on the south coast of Ellesmere (Wetherill 1894, No. 224, specimen in Gray Herbarium—See above); possibly extending to similar or higher latitudes in West Greenland (cf. Ostenfeld 1905, p. 66, sub nom. *S. arctica* f. *groenlandica*), but the records are obscured by confusion with *S. arctica*—cf. Porsild (1920, p. 66, sub nom. *S. groenlandica*).

E. Arctic Distribution. Fairly general south of the Arctic Circle, but northwards recorded only from single stations in northern Baffin and southern Ellesmere.

Occurrence. Common in the mainland and some insular regions of the extreme south, and occasional northwards to Cumberland Gulf, but rare north of that. Grows chiefly in areas damper than those typically inhabited by *S. arctica*, its most characteristic (and in some areas its only) habitat being marshy lowlands where the long, trailing axes lie more or less buried in the surface mosses. Here it is often locally abundant or even codominant, but still is liable to be overlooked.

1. ELLESMERE: r. *South Coast*, Wetherill 1894 (G) 224 as "*S. groenlandica* f."
3. N. BAFFIN: r. *Pond Inlet*, Polunin 1936.
4. C. BAFFIN: o. *Cumberland Gulf*, Pangnirtung, Polunin 1934 and 6, Turner 1935 (K); Kingua, Soper 1924 (O) 132185 det. B. F.(loderus) as "*S. arctica* x *arctophila*."
5. S. BAFFIN: c. *Signuia* near Cape Haven, Schuchert and White 1897 (N) as "*S. glauca*." *Frobisher Bay*, north of York Harbour, Potter 1937. *South Coast*, Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Malte 1927 and 8 (O,N,C) incl. 118635 det. B.F.(loderus) as "*S. arctophila* x *Uva-ursi*?", Polunin 1934 and 6; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 419, sub nom. *S. groenlandica*); Cape Dorset, Malte 1928 (N) 120388 ? doubtful specimen, Polunin 1934 and 6.
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Burwell, Borden 1904 (O) 63053 as "*S. anglorum*," Malte 1928 and 33 (O,G,N,C) incl. 120023 as "*S. arctophila* x *Uva-ursi*," Polunin 1931, 4, and 6.
8. N. QUEBEC: c? *Diana Bay*, Knapp 1936; Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o? *Southampton Island*, South Bay, Polunin 1936.
10. W. COAST HUDSON BAY: f? *Chesterfield*, Gardner 1933 (G), Polunin 1936.

111. *Salix hudsonensis* Schneider in Bot. Gaz. LXVII, p. 57 (1919).

It is not without considerable hesitation that I take this up as a distinct species, not merely because I failed utterly to recognize it in the field as lately as 1936 (although on my return I found it amply represented in my collections), but also because it seems not to have been upheld by anyone recently except Dr. Floderus, who himself now expresses grave doubts as to its separability (See his revision labels), and whose material moreover appears heterogeneous. At least, some of the specimens recently renamed by him are clearly referable to *S. arctica* s.l.; but others match up well with the only fully authenticated scrap of *S. hudsonensis* in the Gray Herbarium (Macoun 1910, Fullerton, Hudson Bay, No. 79167—first named "*S. anglorum*" and then by Schneider during his *Revisio Salicum americanum* 1918 "*S. fullertonensis* x *groenlandica*," and finally "*=S. hudsonensis* Schneider"). I am thus relying on Schneider with his years of careful work on the North American Salices as my sole guide in this instance, although admitting that *S. hudsonensis* seems all too closely related to several other species and forms that occur in the same area. I have for this reason referred to the other species concerned almost all of the specimens mentioned by Schneider in his citations (1918b, pp. 342-3, sub nom. *S. fullertonensis* x *groenlandica*) as in any way doubtful.

General Distribution. Known only from the coasts and islands of Hudson Bay and from "Bathurst Inlet, Katur Point, lat. 67° to 68° N., long. 109° to 111° W., August 22, 1915, R. M. Anderson." This is the northernmost record (cf. Schneider 1918b, p. 343, sub nom. *S. fullertonensis* x *groenlandica*).

E. Arctic Distribution. Apparently limited to the shores of Hudson Bay (including Southampton Island) in the western half of the extreme south.

Occurrence. Is to be found in most collections from the west coast of Hudson Bay, where it must accordingly be fairly common, although elsewhere it is rare.

8. N. QUEBEC: r. Wolstenholme, Polunin 1934.

9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Malte 1928 (O) 120687 *fide* B.F.(loderus).

10. W. COAST HUDSON BAY: c. Whale Point, Comer 1893 (K) det. B.F.(loderus) as "*S. arctophila* x *glaucia*" and then as "*S. callicarpaea*"; Fullerton, Macoun 1910 (O,N) 79167 *fide* Schneider; Chesterfield, ? Freuchen 1923 (C) 733 as "*S. reptans*", Malte 1928 (O,N) 120466 120486 120543 *fide* B.F.(loderus), Polunin 1936; Rankin Inlet, Macoun (O) 79162 as "*S. groenlandica*"; "25 miles south of Cape Eskimo" (Preble ex Schneider 1919, p. 58).

In the Kew Herbarium there are two more rather doubtful specimens labelled "Hudson's Bay opposite Southampton Island Dr. Lyall" and "*Salix cordifolia*: Point Look Out N. side of Hudson's Bay and off Southampton Island, Capt'n D. Herd, H.B.C".

112. *Salix fullertonensis* Schneider in Bot. Gaz. LXVI, p. 340 (1918).

This little willow is both systematically and geographically so near to *S. hudsonensis* that Schneider (1918b, p. 342) at first thought the latter to be a mere hybrid of *S. fullertonensis* and *S. arctophila* (sub nom. *S. groenlandica*). However, he later proposed *S. hudsonensis* as a separate species, and I have followed him in maintaining *S. fullertonensis* as another, although admitting that I do not really understand the inter-relationships of the various members of this extremely difficult group, which evidently falls within the major *S. glauca-cordifolia-brachycarpa* series. Although each, at least in its full development, seems to be a definite entity, I would like to reduce one or two of them to varieties; but just *what* should be a variety of *what* I would not dare propose without much more exhaustive study in the field as well as of all available herbarium material, awaiting which it seems best to follow, or at least not meddle with, the more careful work of recognized authorities.

General Distribution. Apparently limited to the eastern half of North America, occurring chiefly on the west coast of Hudson Bay but also at Sugluk on the mainland of Quebec, and westwards to "Bathurst Inlet, Arctic Sound, lat. 67° to 68° N., long. 109° to 111° W., August 25, 1915, R. M. Anderson," which is the northernmost known station (cf. Schneider 1918b, p. 342).

E. Arctic Distribution. Limited to the extreme south—chiefly to the west coast of Hudson Bay, but also occurring on the south shore of Hudson Strait, and, doubtfully or at least atypically, in the Arctic Archipelago on Mansel Island (cf. Polunin 1938, p. 8).

Occurrence. Fairly common on the west coast of Hudson Bay, but rare elsewhere within its limited range. Prostrate and creeping, occurring chiefly in the damper types of heath, and especially in the outermost zones of snowdrift areas. Never noted as of any real ecological significance.

8. N. QUEBEC: r. Sugluk, Polunin 1936.

(ISLANDS IN HUDSON, ETC., BAYS: ? "Mansel Island" (Bell ex Schneider 1918b, p. 342).)

10. W. COAST HUDSON BAY: c. Fullerton, Borden 1904 (N) *fide* Schneider, Macoun 1910 (O,N) 79164 type No. as "*S. Macounii*"; Chesterfield, Freuchen 1923 (C) ? 732 as "*S. arctica* x *pulchra*" and 734 as "*S. arctica* x *reptans*", also 735 as "*S. arctica* f.", Burwash 1926 (O) 132142 as "*S. brachycarpa*", Malte 1928 (O,N) *fide* B.F.(loderus); Rankin Inlet, Macoun 1910 (O,N) 79163 79165 *fide* Schneider (orig. as "*S. Macounii*"); Cape Eskimo, Macoun 1910 (O,N,C) 79161 *fide* Schneider (orig. as "*S. atra*").

113. *Salix glauca* s.l. (L., Sp. Pl. ed. 1, p. 1019 (1753)).

The rather tentative statement by Schneider (1918b, p. 326) that true *Salix glauca* does not occur in America has recently been discounted by Raup (1931, pp. 241 *et seq.*), who finds it plentiful in the Athabaska-Great Slave Lake region. Similarly, a number of specimens from within or slightly to the south of our area seem to be inseparable on any *constant* character from the general run of European material of *S. glauca*, of which Linnaeus merely said "habitat in Alpibus Lapponicis & Pyrenaicis."

Schneider continued "...the copious and well collected American specimens before me... exhibit a great degree of variability in the shape and size of the leaves, in the amount of pubescence, in the length of the aments, and in the characters of the flowers." This is true of the species within our area and also in Europe, and, there being no wholly satisfactory classification of the various forms and possible subspecies, I am with one exception grouping them all together under the collective name given above. Indeed, having regard to the extreme fickleness of the characters and resulting complexity of the forms within the species, this seems the only practical course to take, even if many of the plants are referable to var. *acutifolia* (Hook.) Schneider.

Besides these variations among specimens that seem definitely to belong to *S. glauca*, we have a further complication introduced by others that seem to occupy a position intermediate between this species and *S. cordifolia* var. *callicarpaea*, and may perhaps represent hybrids. These intermediates have been noted almost everywhere in the extreme south where *S. glauca* is of fairly general occurrence, and similarly intermediate examples between *S. glauca* and *S. arctophila* have been identified from the southern half of Baffin¹ and from the west coast of Hudson Bay. Also occurring in the extreme south of our area are apparent hybrids with *S. arctica*.²

Not only do the above-mentioned species appear to run together, but they all run into yet other species, and in such a manner that with sufficient material to demonstrate their full range of variation a continuous series could probably be constructed connecting almost all the *Salices* of our region, so that we would not know where to end one species and begin the next. This, in spite of what was said above about the danger of immediately assuming all intermediate specimens to be of hybrid origin, presumably comes about by hybridization and subsequent back-crossing.³

Finally, we must mention a specimen from southern Baffin which Dr. Floderus has singled out as "*Salix stenolepis* Flod. sp. nov." This was collected by Dr. Malte at Lake Harbour in 1927 (No. 118812), and I have found other material that matches it, both in southern Baffin and on Southampton Island, as well as a rather similar specimen from Mount McKinley National Park in Alaska (coll. William A. and Clara B. Setchell and determined by Dr. Carleton R. Ball as "*S. glauca*"). The material of the present form from within our area is in some respects intermediate between *S. glauca* and *S. cordifolia*, although approaching much more closely the former. As it is furthermore well characterized by the very long and narrow bracts and stipules, I propose it as a separate variety:

var. **stenolepis** (Floderus) *n. comb.*
(*Salix stenolepis* Floderus in herb.)

Stipulis anguste-lanceolatis, 3-6 mm. longis; bracteis anguste-oblongis, circa 3 (4) mm. longis, minus quam 1 mm. latis.

¹ e.g., Cumberland Gulf, Kekerten Island, Soper 1924 (O) 132118 *vide* B.F.(loderus), and South Coast, Amadjuak Bay, Soper 1926 (O) det. B.F.(loderus) as "*S. arctica* x *arctophila* x *glauca*".

² e.g., Wakeham Bay, Malte 1928 (O.C) 120234 as "*S. callicarpaea*".

³ A similar situation occurs in certain other genera within our area, most notably *Poa* and *Potentilla*.
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General Distribution. The collective species circumboreal, chiefly alpine and subarctic. Northernmost record doubtful, hybrids having been reported from 82° 45' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 240), but the true limit probably lies nearer 76° N. in West Greenland (cf. Porsild 1920, p. 66).

E. Arctic Distribution. Widespread in the mainland regions of the extreme south, and in the Arctic Archipelago extending northwards to Cumberland Gulf, but not authoritatively recorded from north of the Arctic Circle.

Occurrence. Only local or occasional over most of its limited area, growing as a low bush (rarely more than 50 cm. high) in favourable sunny situations where there is a good snow-covering in winter. In less favourable places it is more or less prostrate.

4. C. BAFFIN: r? *Cumberland Gulf*, ? Kingnait, Taylor 1860 (K, *pars*) as "*S. arctica*"; Pangnirtung, Soper 1924 (O) 132196 as "*S. arctica* x *glauc*".
5. S. BAFFIN: l. *Frobisher Bay*, York Harbour, Potter 1937. *South Coast*, Soper (Little Koukdjuak) River, Soper 1931 (O) 132164, etc., as "*S. arctophila* x *glauc*"; Lake Harbour, Malte 1927 and 33 (O) incl. 118812 126895 var. *stenolepis*, Johansen 1927 (C) var. *stenolepis*, Polunin 1934 and 6 incl. var. *stenolepis*.
(N. LABRADOR: ? "*Chidley Peninsula*" (MacGregor ex anon. 1907, p. 83).)
8. N. QUEBEC: o. Wakeham Bay, Malte 1927 and 8 (O,C) 120233, etc., det. B.F. (loderus) as "*S. callicarpaea* f." and "*S. brachycarpa* x *callicarpaea*"; ? Sugluk, Polunin 1936—doubtful specimen.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Polunin 1936 var. *stenolepis*.¹
10. W. COAST HUDSON BAY: r. Chesterfield, Gardner 1933 (G) *vide* Fernald.

114. ***Salix cordifolia*** Pursh, Fl. Am. Sept. II, p. 611 (1814).

- S. atra* Rydberg
- S. labradorica* Rydberg
- S. desertorum* of authors
- S. callicarpaea* Trautv.
- S. Macounii* Rydberg

The names given above as synonyms, which have been applied to specimens collected within our area, seem to belong among the various forms of the present species (cf. Schneider 1921, p. 70) rather than with *S. glauca*, etc., as postulated by Simmons (1913, pp. 69 *et seq.*). Indeed most of the material that in eastern North America has passed as *S. glauca* seems, if the two are to be kept separate, to belong to *S. cordifolia*. This latter is again an extremely variable willow, occurring in many different forms not only in different parts of its range but often in the same place. By some these forms have been treated as different species, by others they have been entirely ignored or else "lumped" under the single species name. By Fernald (1926, pp. 181 *et seq.*) they are maintained as varieties and, according to his careful treatment (l.c.), the following are to be distinguished as occurring within our area.

¹ Reported in my "*Flora of Southampton Island*" (1938b, p. 98) as "? *S. cordifolia* var. *callicarpaea*... atypical."

(1) The typical form appears to be rather uncommon with us, but specimens belonging to or at least closely approaching it have been collected in the southern half of Baffin, both at Lake Harbour and in Cumberland Gulf, and also at Wakeham Bay in northernmost Quebec. *S. labradorica* Rydberg probably belongs here, although J. M. Macoun's report of it from Pond Inlet (ex Low 1906, p. 321) almost certainly has reference to some other species.

(2) The vast majority of the plants throughout the range of the species in our area have the leaves much narrower than in the type and are referable to:

var. **callicarpaea** (Trautv.) Fernald in *Rhodora* XXVIII, p. 184 (1926).

(*Salix callicarpaea* Trautv.; *S. atra* Rydberg)

Dr. Floderus, who until recently was accustomed to return under various complex hybrid names the specimens belonging to this variety, has now come to call them simply "*S. callicarpaea*".

(3) Much of the material that I have referred to var. *callicarpaea* has the leaves so hairy as to approach var. *intonsa* Fernald, although I do not think this occurs in quite its full development within our area. However, Prof. Fernald has so named Sewall's collection from Frobisher Bay, whereas only a little to the south of our area, right along the line from Hebron to Port Harrison and Churchill, there occur specimens with the leaves "permanently and rather densely villous", which are the true var. *intonsa*.

(4) At several points within our area there occur specimens that on both the twigs and young shoots are so nearly glabrous as to be referable to var. *tonsa* Fernald. This now seems to be a mere mixture of glabrate phases lacking true geographical range, and hence better termed

f. **tonsa** (Fernald) *n. comb.*

(*Salix cordifolia* Pursh var. *tonsa* Fernald in *Rhodora* XXVIII, p. 187 (1926).)

(5) Along the shores of Hudson Strait, most typically at Wolstenholme in northernmost Quebec, there occurs a form with very small and narrow leaves, which is to be called

var. **Macounii** (Rydberg) Schneider in *Bot. Gaz.* LXVI, p. 347 (1918).

(*Salix Macounii* Rydberg)

(6) Besides the above-mentioned forms, and the rather numerous intermediate specimens that seem to connect them with one another, there are the apparent hybrids with *S. glauca* that were mentioned above under that species. Several specimens recently named by Dr. Floderus "*Salix callicarpaea* Trautv. f. *angustifolia*" probably also belong to this intermediate category.

(7) Finally, *Salix cordifolia* in our area appears to run right into *S. arctica*, it being possible to construct such a complete and continuous series of intermediate specimens that it becomes almost impossible to decide just where and how to draw the line between the two species.¹

General Distribution. Eastern North America, from Greenland (?) and Baffin to the west coast of Hudson Bay, southwards to the regions surrounding the Gulf of St. Lawrence. Northernmost record doubtful, but I have seen a specimen of var. *callicarpaea* (*fide* Fernald) "Collected by Benjamin Vreeland, M.D., on the Kane 'Grinnell' Expedition, 1850" from Cape York, lat. 76° N. in West Greenland (specimen in Gray Herbarium).

E. Arctic Distribution. Not recorded from the west coast of Hudson Bay except south of our area, or with certainty from the smaller islands of the Arctic Archipelago, but otherwise fairly general northwards to the Arctic Circle. Not fully confirmed north of this, and such records as Sutherland's (1852, II, p. CXC) from north of Lancaster Sound are almost certainly wrong.

Occurrence. Fairly common over most of its limited area, growing sometimes flat on the ground or only weakly ascending in exposed places, but chiefly inhabiting favourable sunny slopes of well-drained, mineral soil. Here it forms a bush most frequently about 50 cm. high and more or less dense and flat-topped, as it cannot persist above the normal winter snow-blanket, the young projecting twigs being eaten off by ptarmigan and hares during hard times, if they have not already been killed by desiccation—or sometimes, perhaps, by actual cold-rigour. On the lower slopes of some sheltered valleys in the extreme south, these bushes are contiguous or actually confluent over considerable areas, covering the ground with a dense scrub below which little else can grow.²

4. C. BAFFIN: c. ? "Scotts Bay" (Taylor 1863, p. 331, sub nom. *S. desertorum* cf. Simmons 1913, p. 69); Exeter Fiord, Taylor (K) as "*S. glauca*". Cumberland Gulf, Kumlien 1878 (G, pars with *S. arctica*); Kingnait, Taylor 1860 (K) as "*S. arctica*"; Pangnirtung, Soper 1924 (O), Malte 1927 (O,N,C) var. *callicarpaea*, Polunin 1934 var. *callicarpaea*, Turner 1935 (K) var. *callicarpaea*; "Kingua" (Giese, Boas ex Ambronn 1890, pp. 87 and 98, sub nom. var. *ovalifolia*); Koukdjuak River, Soper 1924 (O) incl. var. *callicarpaea* as "*S. arctophila* x *glauca*".
5. S. BAFFIN: c. ? "Signuia and Cape Haven" (Schuchert and White ex Holm 1900, p. 67, sub nom. *S. glauca*). Frobisher Bay, Sewall 1927 (G) 280 apprg. var. *intonsa*, to which it was referred by Fernald; ? north of York Harbour, Potter 1937. South Coast, Lake Harbour, Malte 1927, 8, and 33 (O,G,N,C) 126904 typical form *fide* Fernald and many Nos. var. *callicarpaea* (*fide* Fernald) incl. det. B.F.(loderus) as hybrids and then revised as *formae* of "*S. callicarpaea*", Knapp 1933, Polunin 1934 and 6 typical form and var. *callicarpaea*, and 384 ? var. *Macounii*; ? Bowdoin Harbour, Robinson 1922 (G).

¹ To this intermediate (probably hybrid) series belong the following specimens, among others:

C. BAFFIN: Cumberland Gulf, ? Pangnirtung, Polunin 1934 No. 514; Kekerten Island, Soper 1924 (O) 132186 as "*S. arctophila* x *glauca*".

S. BAFFIN: Lake Harbour, Malte 1928 (O) 121031 121033 as "*S. callicarpaea*", Polunin 1934 and 6 Nos. 433 1119.

N. QUEBEC: Wakeham Bay, Malte 1928 (O) 120954.

² Such dense bushy (as opposed to merely creeping) willows afford one of the few types of vegetation noticed and named by the local Eskimos, who call these areas *Orkpittalik*, i.e., the place of shrubs, as also in Greenlandish Eskimo. One of the few other Eskimo vegetation names in general use is *Padlerk*, for a plain of mixed plants of bushy growth that is difficult to sledge over, because the snow is soft around the branches and allows the dogs to fall through and pierce their feet on the frozen twigs.

7. N. LABRADOR: o. Burwell, Polunin 1934 and 6 var. *callicarpaea* and var. *Macounii*.
8. N. QUEBEC: c. Payne Bay, Ney and Courtright 1936 var. *callicarpaea*; Diana Bay, Knapp 1936 (? in lit.*); Wakeham Bay, Malte 1927, 8, and 33 (O,G,N,C) typical form and var. *callicarpaea* (fide Fernald) incl. det. B.F. (loderus) as "? *S. brachycarpa* x *callicarpaea*" and "*S. callicarpaea* forma ad *S. anglorum* var. *kophophylla* vergens ♀", Polunin 1936 var. *callicarpaea*; Sugluk, Malte 1933 (O,G,N,C) var. *callicarpaea* (fide Fernald), Polunin 1936 var. *callicarpaea*; Wolstenholme, Polunin 1934 and 6 var. *callicarpaea* and var. *Macounii*; Cape Smith, Polunin 1936 var. *callicarpaea*.
- (ISLANDS IN HUDSON, ETC., BAYS: ? Southampton Island, South Bay, Sutton 1930 (G) var. *callicarpaea* scr. Raup.)

115. ***Salix Richardsoni* Hook., Fl. Bor.-Am. II, p. 147 (1839).**

All the specimens from within our area have much smaller leaves than is the case with material from nearer the type locality in the west, so that when I showed some Baffin specimens to Mr. A. E. Porsild, who certainly knows the species after his years of wandering in the Canadian Western Arctic, which is its chief centre of distribution, he said they did not look anything like *S. Richardsoni*. The Eastern Arctic plant also differs in other, less obvious details, and so I propose it as

var. ***McKeandii* n. var.**

Laminis adultis multo minoribus quam in forma typica, laminis 1-3 (4) cm. longis et 0.4-1.3 (1.5) cm. latis; capsulibus plerumque brevipediculatis, pediculis dense pilosis. Type in British Museum, cotype in Fielding Herbarium, Oxford: *Nicholas Polunin*, Pond Inlet, Baffin Island, No. 2450, Sept. 4, 1936. Figures on Plate V.

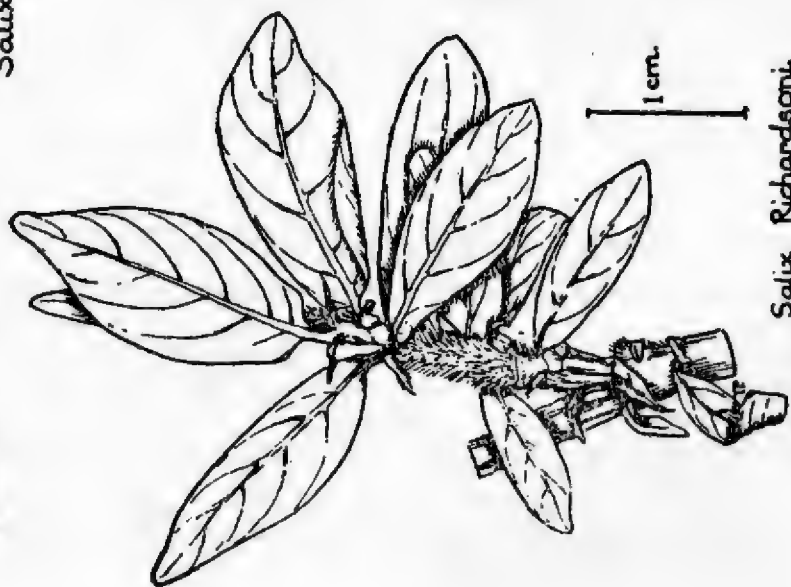
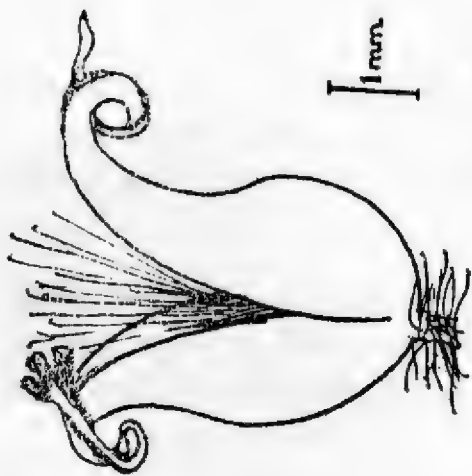
It is a pleasure to name this well marked geographical variety after Major David L. McKeand. The records for Baffin extend the previously known range of the species considerably to the east (cf. Grøntved 1936, p. 35).

General Distribution. Apparently limited to the arctic and subarctic regions of North America, the whole species extending from westernmost Alaska to Baffin. Northernmost record Pond Inlet, 72° 43' N. in Baffin (Mathiassen 1923 and five others—See below).

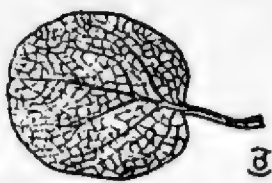
E. Arctic Distribution. Widespread on the west coast of Hudson Bay and in Baffin. Also occurring on Southampton Island, and in less typical form (approaching *S. calcicola*—See below) in northernmost Quebec and Labrador.

Occurrence. Generally only occasional. Grows chiefly in areas of damp tundra, where it forms bushes most often about 50 cm. high and 1-2 m. in diameter, with the tops flat or rounded, as the twigs cannot persist above the normal winter snow-blanket. Even in open plains where the snow is mostly blown away, the cumulative effect of a slight growth of the twigs each summer may allow the bushes to become quite large in time,

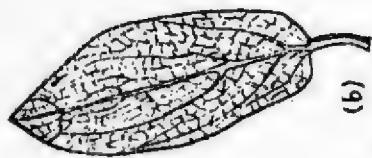
PLATE V



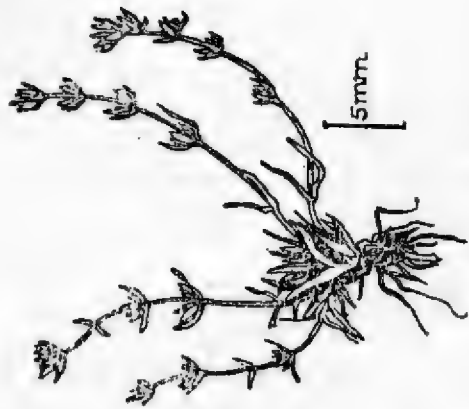
Salix richardsoni
var. *McKeandii*



Salix reticulata



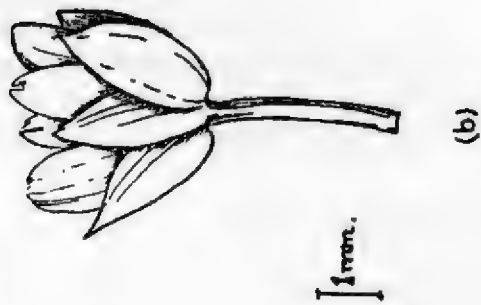
f. *oblongifolia*



Sagina nodosa f. *bulbillosa*



Arenaria rossii



var. *Daethiana*

for the branches catch the snow and hold it to about the level of their tops, and, growing out a little farther each year, are able to get protection to a greater and greater height.¹ All var. *McKeandii*:

3. N. BAFFIN: l. Pond Inlet, Mathiassen 1923 (C) 783 as "*S. arctica* x *Barclayi*?", and five other collectors (O,M,N,C), incl. Malte 1927 (O,N) 118704 as "*S. Richardsoni* ad *S. calcicolam* vergens" scr. Floderus.
4. C. BAFFIN: r. Nettilling Lake, Soper 1925 (G).
(S. BAFFIN: ? See below.)
6. MELVILLE PENINSULA: r? Duckett Cove, Parry (B) as "*Salix herbacea*"; Repulse Bay, Parry 1821 (G).
(N. LABRADOR: ? See below.)
(N. QUEBEC: ? See below.)
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, South Bay, Malte 1928 (O) 120596 120597, Sutton 1930 (G), Manning 1934, Polunin 1934 and 6, ? Baird 1936.
10. W. COAST HUDSON BAY: o? Chesterfield, Polunin 1936.

Salix inter *Richardsoni* var. *McKeandii* et *calcicola*

Somewhat more common and widespread within our area than true *S. Richardsoni* var. *McKeandii* are forms transitional between this and *S. calcicola*. These in almost all their characters are intermediate, having the catkins less enormous than in *S. Richardsoni*, the leaves more rounded, and the stipules shorter, broader, and more evenly serrate. In many places where both parents occur these intermediates look like direct hybrids, but in some cases they grow far from any known station of one or other species, and, moreover, in different examples tail off into these species in a manner that must leave some room for doubt as to their true origin, although probably they all result from the production of fertile hybrids somewhere back in their history. These apparent hybrids, of which the following examples may be cited, are distributed almost throughout the range of *S. calcicola* within our area:

- C. BAFFIN: Nettilling Lake, Soper 1925 (O) *vide* B.F.(loderus) as "*S. calcicola* x *Richardsoni*."
- S. BAFFIN: Lake Harbour, Malte 1928 (O,N,C) 120315 *vide* B.F.(loderus) as "*S. calcicola* x *Richardsoni*".
- N. LABRADOR: Burwell, Polunin 1936 No. 1097.
- N. QUEBEC: Wakeham Bay, Malte 1928 (N); Sugluk, Polunin 1936 No. 1538.
- ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island*, South Bay, Malte 1928 (O,N,C) incl. det. B.F.(loderus) as "*S. Richardsoni*" and "*S. Richardsoni* ad *S. calcicolam*" and "*S. calcicola* var. ad *S. Richardsoni* vergens," Polunin 1934 and 6.

116. *Salix calcicola* Fernald and Wiegand in *Rhodora* XIII, p. 251 (1911).
S. Richardsoni Hook. var. *Macouniana* Bebb

This species, remarkably distinct from *S. Richardsoni* in the centre of its distribution in eastern North America, nevertheless grades into it almost everywhere in the north, as should be clear from the above. Indeed the majority of specimens from the Arctic Archipelago are, according to Floderus and Enander, "somewhat impregnated with *S. Richardsoni*"—

¹ Thus it is the largest land plant known to grow in the Canadian Eastern Arctic so far north as Pond Inlet.

i.e., their leaves and stipules suggest that species in being narrower than in typical *S. calcicola*, although this latter does occur in the Arctic Archipelago.

There is also another form that is superficially suggestive of this intermediate, but whose leaves are more markedly obovate (being broad above and narrowly tapering below) than in any other specimen of the series that I have seen. Its chief mark of distinction lies, however, in the stipules. These, instead of being coarsely serrate or at least obviously dentate, are entire except for an occasional almost invisible gland or two towards the base. This striking form was only collected once, when unfortunately only a single branch was taken; it is:

var. *Nicholsiana* Polunin in Jour. Bot. LXXVI, p. 98 (1938).

"Differs from the type in having the leaves obovate, tapering narrowly below; with stipules persistent, lanceolate to narrowly ovate, entire or subentire." Known only from the type locality—a few miles inland of the Hudson's Bay Company's post in South Bay. Southampton Island (Polunin 1936, No. 2273).

General Distribution. Confined to eastern North America, ranging from the region around the Gulf of St. Lawrence westward to the west coast of Hudson Bay and northward to Southampton Island and central Baffin. Northernmost record Nettilling Lake, c. 66° 15' N. in Baffin (Soper 1925, specimen in Herb. Ottawa).

E. Arctic Distribution. General in the mainland regions of the extreme south and in the southern parts of the Arctic Archipelago northwards to the Arctic Circle.

Occurrence. Fairly common in its area, and sometimes abundant to dominant on open calcareous soils even in rather dry and exposed plateau land such as that of Akpatok Island. Occurs generally as a low shrub rising only 10-30 cm. above the surface of the ground, with the irregularly ascending axes gnarled and twisted, protected by a thick resistant bark and apparently growing very slowly indeed.

4. C. BAFFIN: r. Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: f. Lake Harbour, Malte 1933 (O,G,N), Knapp 1933, Polunin 1934 and 6; Amadjuak Bay, Soper 1926 (O) det. B.F.(loderus) as "*S. calcicola* x *Richardsoni* ♀"; Bowdoin Harbour, Robinson 1922 (G) *fide* Fernald; Cape Dorset, Soper 1926 (O) *fide* B.F.(loderus), Polunin 1934.
7. N. LABRADOR: l. Burwell, Borden 1904 (N) 63044 63045 as "*S. labradorica*", Macoun 1910 (G,N,C) 79155, Johansen 1927 (C) 1221 as "*S. speciosa*" *scr.* Ostenfeld, Malte 1928 and 33 (O,G,N,C) *fide* B.F.(loderus), Polunin 1934 and 6.
8. N. QUEBEC: c. Diana Bay, Knapp 1936 (? *in lit.* *); Payne Bay, Ney and Courtright 1936; Wakeham Bay, Johansen 1927 (C) 1158 as "*S. speciosa*" *scr.* Ostenfeld, Malte 1928 and 33 (O,G,N,C) incl. 120217 120281 det. B.F.(loderus) as "*S. calcicola* ad *S. Richardsoni* *vergens*", Polunin 1936; Sugluk, Polunin 1936; Cape Smith, Malte 1928 (O,N,C) *fide* B.F.(loderus), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 9 Nos. as "*S. Hookeriana*?" and 7 Nos. as "*S. arctica*". *Southampton Island*, South Bay, Malte 1928 (O, *pars*), Polunin 1936 var. *Nicholsiana*.
10. W. COAST HUDSON BAY: r. Cape Eskimo, Gardner 1933—specimen in Herb. Oka Agricultural College, Quebec.

117. *Salix alaxensis* (Anderss.) Coville in Proc. Wash. Acad. Sci. II, p. 280 (1900).

S. speciosa Hooker and Arnott, not Host

One of the most handsome and striking of all Salices, and also one of the most distinct, the "Felt-leaf Willow" according to Coville (1901, p. 312) "holds an important economic relation to the mining industry and to human existence generally in northern Alaska", for in many places beyond the limit of spruce timber it "furnishes the only wood available as fuel to Indians, prospectors, and explorers". In the Eastern Arctic regions it is not, however, of any real use, for although its bushes tend to run somewhat larger than those of any other species within its limited range in our area, they nevertheless remain quite small, being rarely more than a metre in height.

To the distribution map given by Raup (1930, p. 202) we have now to add considerable extensions eastwards, as will be seen from the citations given below.

General Distribution. North America; from the west coast and islands of Alaska eastward to Hudson Bay. Range almost identical with that of *S. Richardsoni*, but not stretching quite so far to the north or to the east. Northernmost record c. 72° N. on Banks Island (McClure ex Simmons 1913, p. 68, sub nom. "*S. alascensis*").

E. Arctic Distribution. Apparently limited to the west coast and islands of Hudson Bay, where it extends northwards nearly to the Arctic Circle in the Frozen Strait region.

Occurrence. Rather uncommon — a coarse shrub generally 50-80 cm. high, growing chiefly in sheltered depressions that have a good covering of snow every winter. Where the snow drifts more deeply the topmost twigs may straggle to a height of 1-2 m.

6. MELVILLE PENINSULA: o. *Vansittart Island*, Danish Island, Freuchen 1922 (C) 259a; *Georgina Island*, Freuchen 1922 (O,C) 23; *Repulse Bay*, Olsen 1922 (C) 371.
9. ISLANDS IN HUDSON, ETC., BAYS: 1. *Southampton Island*, White Island, Mathiassen 1922 (C) 472; *South Bay*, Sutton 1930 (G), Polunin 1936; *Nuvoodlik Hills*, Baird 1936.
10. W. COAST HUDSON BAY: 1. *Chesterfield*, Malte 1928 (O,C), Gardner 1933 (G) 333 "arbuste 1-2 mètres" and 342 "forme naine", Polunin 1936.

118. *Salix planifolia* (agg.) Pursh, Fl. Am. Sept. II, p. 611 (1814).

S. chlorophylla of authors, prob. not Anderss.

S. phylicifolia of American authors, not L.

Another extremely variable species; no satisfactory classification of the numerous forms having so far been proposed, I do not dare name or even delimit those occurring in the rather scanty material from within or slightly to the south of our area. Suffice it to say that the twigs may be anything from beautifully blue-glaucous to shiny-glabrous or densely pilose, and the leaves anywhere from narrowly lanceolate to ovate, entire to coarsely serrate, and obscurely to very exaggeratedly veined. However,

as Pursh (1814, p. 611) remarks, in general "This singular species distinguishes itself at first sight by its remarkable plain and patent leaves; it is inclined to rise from the ground as a single low stem. . . ." This last tendency is well marked even within our area, where most other species have come to take on a more or less prostrate or weakly ascending mode of growth. For it is our only plant that ever has any semblance of a "tree" form, and even as far north as lat. $63^{\circ} 10'$ on Soper (Little Koukdjuak) River it may, according to Mr. J. D. Soper (*in lit.* 1936), form "trees up to 12-13 ft. high", with stem 3 inches in diameter at the base. This is twice the height of any other species recorded from within our area, and more than twice the height of any plant I have seen there. According to verbal information from Mr. S. C. Knapp, the upper parts of these "trees" are sometimes to be seen projecting as much as 6 feet above the snow in January¹.

General Distribution. North America, extending from northern New England to southern Baffin, thence westwards to Great Bear Lake and the Rocky Mountains. Northernmost station probably around 66° N. in central North America (Richardson ex Raup 1936b, p. 239).

E. Arctic Distribution. Limited to the extreme south, where it is fully confirmed only from Chesterfield on the west coast of Hudson Bay and from inland of Lake Harbour in southern Baffin².

Occurrence. Rare but conspicuous, growing as an upright or ascending shrub 2-13 feet high, in the manner mentioned above. Chiefly in favourable sheltered valleys or dykes where the roots can tap a plentiful and lasting supply of water all the summer, and where the stems and branches are at least partly protected in a deep drift of snow during winter and spring.

5. S. BAFFIN: r. Soper (Little Koukdjuak) River, Soper 1931 (O) *fide* B.F. (Ioderus).

(ISLANDS IN HUDSON, ETC., BAYS: ? Nottingham Island, Bell 1884 (B*).)

10. W. COAST HUDSON BAY: r. Chesterfield (Tyrrell ex Schneider 1920, p. 77), Polunin 1936.

Salix Myrsinites, etc.

Salix Myrsinites L. was tentatively recorded by Simmons (1913, p. 72) from Baffin, following Taylor (1863, p. 331), who reported it therefrom as "*S. arbutifolia*." The records should be transferred to another species, probably to *S. cordifolia*. Taylor also reported (1863, p. 331) *S. vestita* Pursh from Cumberland Gulf, which, even if the species is plentiful only a little to the south of our area and indeed occurs within it—cf. page 153, would be out of its normally accepted range. The record ought almost certainly to be transferred either to *S. reticulata* or to *S. arctica*—cf. p. 153.

¹ The physiology of such willow "trees" has not been studied, but it seems probable that they are limited to areas where the deeper layers of soil remain unfrozen in an average winter (cf. Polunin 1933, pp. 313-4, and 1937b, p. 939).

² The reports by Macoun (1886, p. 446, sub nom. *S. chlorophylla*) from "Upper Savage Islands . . . Digge's and Mansfield Islands, Hudson Strait. (R. Bell)" are with little doubt erroneous, as no specimens from any of these places can be found. However, Simmons (1913, p. 68) cites one from Nottingham Island, which is probably correct.

Again, the report in my "Flora of Akpatok Island" (1934, p. 204) of "S. Hookeriana Barr. ?" is founded on another species (*S. calcicola*), and, finally, *S. Pallasii* Anderss. var. *diplodyctya* Anderss., tentatively reported from within our area by Macoun (1886, p. 452), was later by the same author (1888, p. 359) relegated to synonymy under *S. arctica*.

BETULACEAE

119. *Betula glandulosa* Michx., Fl. Bor.-Am. II, p. 180 (1803).

This is a bad *typus polymorphus*, varying, especially around Churchill and other regions slightly to the south of our area, enormously in size and habit, in the glandulosity of the twigs, and in the size and shape of the leaves (cf. Raup 1936b, p. 242). The material from strictly within our area is, however, more nearly uniform, being of low espalier habit and having small, rounded leaves and densely glandular twigs. This, even if it is merely a reduced northern form that can occur farther south in exposed or otherwise unfavourable places, certainly occupies alone all the northernmost stations of the species, and so seems to deserve maintenance as

var. *sibirica* (Ledeb.) S. F. Blake in *Rhodora* XVII, p. 87 (1915).
(*Betula rotundifolia* Spach.)

This occurs not only in the mainland parts of our area but also in Baffin northwards to Cumberland Gulf, and moreover on Southampton Island. Thus to the range given for the species by Sargent (1896, p. 47) we have considerable northern extensions to record; we must also note it as new to the Arctic Archipelago.

General Distribution. The whole species extending from southern Greenland across subarctic and alpine regions of North America to northern Asia. Northernmost station appears to be Demarcation Point, 69° 41' N. in eastern Alaska (Johansen ex Macoun and Holm 1921, p. 10A).

E. Arctic Distribution. Widespread in the extreme south, including the southernmost parts of the Arctic Archipelago, and in Baffin extending northwards to near the Arctic Circle.

Occurrence. Rather local, but sometimes abundant to dominant on well-drained and sunny, sheltered slopes. Here it grows generally as an ascending shrub 30-60 cm. high and often more than a metre in diameter, flat-topped as a result of being unable to persist above the usual level of the snow in winter. On the other hand, in exposed places it remains pressed against the surface of the soil, creeping laterally to form a mat of gnarled, thick-barked axes and glandular twigs. All var. *sibirica*:

4. C. BAFFIN: r. *Cumberland Gulf*, near Blacklead Island, Soper 1924 (O).
5. S. BAFFIN: l. Peterforce Sound, coll. V. C. Wynne-Edwards 1936 (Potter, No. 8127); Soper (Little Koukdjuak) River, Soper 1931 (O,N); Lake Harbour, Johansen 1927 (C), Malte 1927 (O,G,C), Knapp 1933, Polunin 1934 and 6.
7. N. LABRADOR: r. near Burwell—twigs imported by Eskimos in *Umiak* (women's boat) 1936 *vide* Polunin.

8. N. QUEBEC: f. Payne Bay, Ney and Courtright 1936; Wakeham Bay, Johansen 1927 (C); King George Sound, Bell 1897 (O); Sugluk, Malte 1933 (O,G), Polunin 1936; River Kovik, Low 1898 (O).
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Manning 1934.
10. W. COAST HUDSON BAY: o. Chesterfield, Malte 1928 (O,G,C), Polunin 1936; Eskimo Point (Cape Eskimo), Macoun 1910 (O) 79394 as "*B. nana*", Birket-Smith 1923 (C), (?Gardner 1937, p. 36, sub nom. *B. Michauxii* and *B. nana*).

120. *Betula nana* L., Sp. Pl. ed. 1, p. 983 (1753).

This seems to be the first fully confirmed record (*fide* Fernald) of *B. nana* in North America between Greenland and western Alaska, previous reports being based (in most cases certainly and in all others at least possibly) on the much more common *B. glandulosa* or on the closely related *B. Michauxii* Spach. This last, however, seems to be restricted to the regions around the Gulf of St. Lawrence, with one station on the coast of Labrador somewhat farther north. There is also a specimen in the National Herbarium of Canada labelled "No. 23826 Thickets (swamps) W. coast of Hudson's Bay (?) R. Bell 1882" which probably belongs to *B. nana*, and, if confirmed, would help greatly in bridging the last big gap in what previously appeared to be a strangely broken distribution. It seems probable that closer investigation in the future may show this to be one of the few (perhaps the only?) fully circumpolar or circumboreal amentiferous shrubs.

General Distribution. ? Circumpolar (*See above*), chiefly arctic and alpine. Northernmost record Green Harbour, c. 78° N. in Spitsbergen (Resvoll-Holmsen 1927, p. 35, and cf. Polunin 1933, field notes).

E. Arctic Distribution. Known only from Cumberland Gulf in central Baffin, where it has been found in two small side-fiords near the Arctic Circle.

Occurrence. Rare. My one collection of this species from within our area was growing, in the manner of its southern representative *B. Michauxii*, as a very low shrub in a deep sphagnous bog above whose surface the thin whippy branches rose only 15-20 cm.—in spite of the fact that the area was beautifully sheltered and probably drifted over with deep snow from early in the winter.

4. C. BAFFIN: r. *Cumberland Gulf*¹ (Kumlien 1879, p. 165); Pangnirtung, Polunin 1934, Turner 1934 (K); Kingua, Soper 1924 (O,C*).

POLYGONACEAE

121. *Koenigia islandica* L., Mant., p. 35 (1767).

The paucity in records of this plant from within our area must be attributed to its small size, for actually it is to be found almost everywhere that a proper search is made, not only in the extreme south but also throughout Baffin and at least as far north as the south coast of Devon Island. It rarely exceeds 5 cm. in height in our area, but still varies greatly

¹ A specimen in the British Museum "Brought home from Davis's Straights by Capt Craycroft 1732" is probably from West Greenland, but possibly from our area.

in size (being sometimes scarcely 1 cm. high) and also in the degree and luxuriance of its branching. Apart from *Montia lamprosperma* (q.v.) and possibly some examples of *Cochlearia*, *Koenigia islandica* is probably the only annual occurring in our area; nor do I think that it is by any means always annual with us.

General Distribution. Circumpolar; also in the Southern Hemisphere. Northernmost record 79° 55' N. in Sorgfjord, Spitsbergen—cf. Wulff (1902, p. 102) who claims that "Dies ist wahrscheinlich die nördlichste Lokalität der Erde, wo eine annuelle Pflanze noch gedeiht".

E. Arctic Distribution. Although not yet recorded from Melville Peninsula, Southampton Island, and some other considerable land-masses, it is probably quite general in the southern two-thirds, at least around the coasts. Appears to be absent from Ellesmere.

Occurrence. Common on sandy or muddy sea or lagoon shores above high tide mark, where it often forms a characteristic close sward mixed with other diminutive species such as *Montia lamprosperma* and *Stellaria crassifolia*. Also occurs inland around the margins of freshwater pools, and on open, muddy areas such as the surface of "polygons", even if they become quite dry in late summer.

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1936.
3. N. BAFFIN: r. Arctic Bay, Polunin 1936.
4. C. BAFFIN: f. Clyde, Polunin 1934 and 6; "Cape Searle" (Taylor 1863, p. 330). *Cumberland Gulf*, "Midliattwack (Milikdjuak) Islands and Kingnite (Kingnait)" (Taylor 1863, p. 330); Pangnirtung, Polunin 1934 and 6, Turner 1935 (K).
5. S. BAFFIN: c. Signuia near Cape Haven, Schuchert and White 1897 (O, *pars* with *Salix herbacea*) 102 as "*Macounastrum islandicum* (L.) Small". *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Knapp 1933, Polunin 1936; Upper Savage Island, Bell 1884 (O); Cape Dorset, Polunin 1934 and 6.
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G); Burwell, Malte 1927 (O,G,C), Porsild 1930 (O*), Polunin 1934 and 6; Grenfell Tickle, Potter and Brierly 1934 (G, *pars* with *Catabrosa algida*).
8. N. QUEBEC: c. Wakeham Bay, Malte 1928 (O,G, *pars* with *Cerastium alpinum*), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G), Polunin 1934 and 6.
9. ISLANDS IN HUDSON, ETC., BAYS: o? Mansel Island, Bell 1884 (O, *pars* with *Stellaria crassifolia*, etc.).
10. W. COAST HUDSON BAY: o? Chesterfield, Malte 1928 (C), Polunin 1936.

122. *Oxyria digyna* (L.) Hill, Hort. Kew., p. 158 (1768).
O. reniformis Hook. fil.

This seems to be one of our few really "good" species, varying hardly at all except in the size of the leaves and the height of the axes, which may be anywhere from less than 5 to more than 30 cm. It is also one of our most ubiquitous and generally abundant species, and one of the few that are of direct and individual importance economically. Thus, the succulent leaves are gathered and eaten in summer, either raw or cooked, by Eskimos and white men alike. It makes an excellent salad at the best of times, and at the worst will save the lives of the scurvy-ridden. Although the natives

in summer are "always picking up bits of plants of all sorts except mushrooms and eating them" — none of the higher plants in the real Arctic are at all poisonous — they nevertheless seem to rely more on this "sorrel" (or, as I have heard white visitors call it, "rhubarb") than on any other plant to counteract the meat diet. Thus, although they are not generally given to conserving anything, they frequently go out in the autumn and pick bags of *Oxyria* leaves, allowing them to dry and eating them only some weeks later when snow covers the ground.

Oxyria is also much esteemed by the few herbivorous land mammals, so that, like Hugh Clutterbuck (cf. Summerhayes and Elton 1928, p. 216), I have in Spitsbergen watched a reindeer go from clump to clump, eating off all the leaves and generally the flowering axes too. Even where there are no longer any reindeer, as for instance in the Julianehaab district of south-west Greenland and for a radius of some miles around the trading posts in the Hudson Strait region, the *Oxyria* plants will frequently be found cropped off almost to the level of the ground — presumably by hares, or, at least on Akpatok Island as I have seen, sometimes by polar bears. The plants have generally a plentiful reserve of food stored underground in a thick yellowish taproot and, as far as I have been able to make out, recover with the loss of at most one year in their flowering activities. Altogether a very hardy plant, whose frost-resistant properties have already been discussed by Gelting (1934, p. 89).

General Distribution. Circumpolar; all over the Arctic. Northernmost confirmed record I. P. Koch Fiord, 82° 48' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 238). Found in Ellesmere only a few minutes of latitude farther south at Cape Richardson, 82° 35' N. (Hansen 1920, specimen in Copenhagen Herbarium), and perhaps even to 83° N. (Feilden, note in Kew Herbarium).

E. Arctic Distribution. With little doubt complete on ice-free land, except perhaps on the west coast of Hudson Bay.

Occurrence. Abundant almost everywhere, but noticeably less common in the most luxuriantly vegetated regions of the extreme south (and, unless extensively overlooked, very rare on the west coast of Hudson Bay). This, as it dislikes competition, being essentially an "open soil" plant, although occurring in a great range of habitats and hence as a subsidiary element in many different associations. Especially characteristic of the innermost zones of late-melting or persistent snow-patches in the south, and of solifluction or other damp clay or gravel areas in the north. In such situations often the largest and most important plant of the sparse community, as it may also be on much drier slopes and well-drained, earthy dykes cut by springtime streams of snow-water. Generally around 20 cm. high.

1. ELLESMERE: c. everywhere — numerous records from almost all localities.
2. DEVON, ETC., ISLANDS: c. everywhere — numerous records from almost all localities.
3. N. BAFFIN: c. everywhere — numerous records from almost all localities.
4. C. BAFFIN: c. everywhere — numerous records from almost all localities.
5. S. BAFFIN: c. everywhere — numerous records from almost all localities.

6. MELVILLE PENINSULA: c. everywhere — numerous records from almost all localities, incl. Igloolik, Parry 1823 (B) as "*Rumex Digynus* eaten by us as an anti-scorbutic".
7. N. LABRADOR: c. everywhere — numerous records from almost all localities.
8. N. QUEBEC: c. everywhere — numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere — numerous records from all the larger islands.
10. W. COAST HUDSON BAY: r. Wager Bay, Macoun 1910 (O).

123. *Polygonum viviparum* L., Sp. Pl. ed. 1, p. 360 (1753).
Bistorta vivipara (L.) S. F. Gray

Another of our very commonest and most ubiquitous plants, whose leaves although less "succulent" than those of *Oxyria* are nevertheless good to eat, and whose bulbils may be chewed without ill effect¹. Also one of the hardiest of plants, to be seen more frequently than any other species in the Arctic still flowering in late autumn—even after hard frosts, which apparently leave the buds unharmed. However, the bulbils are not infrequently destroyed by a smut, which is evidently a species of *Ustilago*, or by a rust (*Puccinia Bistortae* (Str.) DC.).

Polygonum viviparum in our area is rarely less than 4 or more than 25 cm. high, and generally around 10-15 cm., otherwise appearing to vary only in the shape of the radical leaves and in the colour of the petals. These characters may vary independently of one another, but the leaves tend to be broader and shorter and the flowers more markedly pink in exposed localities, approximating most frequently in the Far North to Wahlenberg's " β alpinum: foliis inferioribus ellipticis, floribus roseis. *Bistorta minima alpina*, foliis imis subrotundis. Ray syn. 147." This appears to occur throughout the range of the species and to be no more than a minor form, as I have frequently seen intimated and even published (e.g., in Simmons 1906, p. 128), although never in a formal way. Hence, it seems necessary to propose

f. **alpinum** (Wahlenb.) n. comb.
(*Polygonum viviparum* L. var. *alpinum* Wahlenb., Fl. Lapp., p. 99 (1812).)

General Distribution. Circumpolar; all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 238); also found a little farther south at Dumbbell Harbour in Ellesmere (Feilden 1876, specimen in Kew Herbarium).

E. Arctic Distribution. Almost certainly complete on ice-free land.

Occurrence. Abundant everywhere²; one of the most familiar of arctic plants and perhaps the most ubiquitous of all, occurring alike in exposed barrens, closed dry heaths, luxuriant herb or grassy areas, and

¹ The bulbils are extensively eaten by ptarmigan, whose crops may sometimes contain little else. Gelting (1934, p. 90) remarks that in East Greenland "The rhizomes, which may be up to 1 cm. thick, are in great demand among Arctic hares and ptarmigans".

² Simmons (1913, p. 76) is quite wrong in agreeing with Hooper's note written on a sheet belonging to the Linnean Society of London that it is "always very scarce".

true marshes—indeed in practically all land communities. Rarely dominant except very locally, but sometimes with *Salix herbacea* forming a characteristic zone in late-snow patches (cf. Polunin 1934b, p. 388 and Pl. XXXVIII).

1. ELLESMERE: c. everywhere—numerous records from almost all localities.
2. DEVON, ETC., ISLANDS: c. "North Kent" (Simmons 1909b, p. 20). *Devon Island*, "Viks Fiord" (Schei ex Simmons 1909b, p. 6); Dundas Harbour, Polunin 1934 and 6—bulbils the only thing recognizable in excrement of geese preparing to migrate; Powell Creek, Lyall 1852 (K); Beechy Island, Lyall (K); "Wellington Channel" (Lyall ex Hooker 1857, p. 117). *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T,K). *Somerset Island*, Parry (B); "Port Kennedy" (Walker ex Hooker 1861, p. 84).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from all the larger islands.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities.

Polygonum aviculare L.

This was reported (anon. 1907, p. 83) as having been collected by Sir William MacGregor on Chidley Peninsula, although I have been unable to find any specimen so named. Even if the species is "nearly cosmopolitan" it seems unlikely to persist quite so far north in Labrador, although it grows as a recent introduction at Churchill on the west coast of Hudson Bay. Perhaps MacGregor's plant was the closely related *P. Fowleri* Robinson, to which it seems tolerably safe to refer seedlings belonging to this group, which I found at Hebron in 1936. However, in the absence of any confirmatory specimen, it seems safer to exclude from our flora any *Polygonum* other than the usual *P. viviparum* (See Part IV).

PORTULACACEAE

124. *Montia lamprosperma* Cham. in Linnaea VI, p. 565 (1831).

It is remarkable that only once¹ has a member of this family been recorded from anywhere within our area, as the present species is quite common around the coasts almost everywhere in the extreme south, and also occurs northwards at least to Cumberland Gulf. Indeed it is so plentiful that I have been able to detect scraps of it in collections of other plants made by previous workers—but still have to note it as "new" for our area and also for the entire Arctic Archipelago. The main reason for its having

¹ By W. J. Hooker (1825b, p. 189), who reported *Montia fontana* as having been collected "upon a few low islands which were met with in, or near, the position assigned to Southampton Island". The material doubtless belonged to the then unrecognized *M. lamprosperma*.

been so completely overlooked is, of course, its very small size. Generally it is only 1-4 cm. high in our area, although occasionally when growing in a luxuriant sward in the extreme south it may straggle to a height of 10-12 cm.

Montia lamprosperma is one of the three plants that in North America previously passed as *M. fontana* (cf. Fernald and Wiegand 1910, p. 138 and Pl. 84). According to these authors, it is a "yellowish-green annual," whose seeds are "lenticular, highly lustrous"; but in our area it is I think more often biennial, and the seeds are sometimes plump and only slightly lustrous, and thus reminiscent of those of *M. rivularis* Gmel.

General Distribution. ? Possibly circumboreal, but so far unrecorded from the central parts of Eurasia. Northernmost report seems to be that from the island of Magerø, lat. 71° 9-10' N. off the north coast of Scandinavia (Dahl 1934, p. 311). It reaches nearly as far north in West Greenland (Porsild 1920, p. 76).

E. Arctic Distribution. Widespread in the extreme south (probably almost complete around coasts) including southern Baffin; extending to Cumberland Gulf, but not found north of the Arctic Circle.

Occurrence. Common near the seashore at most points visited by me in the mainland regions of the extreme south, and fairly frequent in southern Baffin. Shows some preference for slightly saline habitats and was never seen far from the coast. Mixed with *Koenigia islandica* and *Stellaria crassifolia* it often forms a dense if diminutive sward along the shores of brackish lagoons and sheltered arms of the sea, chiefly above the more definitely "salt marsh" zone, which is dominated by *Puccinellias*, *Stellaria humifusa*, and halophytic *Carices*.

4. C. BAFFIN: 1? Pangnirtung, Polunin 1934 and 6.
5. S. BAFFIN: c? *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
7. N. LABRADOR: o? Grenfell Tickle, Potter and Brierly 1934 (G, *pars* with *Stellaria crassifolia*) 2758.
8. N. QUEBEC: f? Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936.
(ISLANDS IN HUDSON, ETC., BAYS: ? "Southampton Island or near" (Lyon ex Hooker 1825b, p. 189, sub nom. *M. fontana*).)
10. W. COAST HUDSON BAY: 1? Chesterfield, Polunin 1936.

CARYOPHYLLACEAE

125. *Silene acaulis* (L.) L., Sp. Pl. ed. 2, p. 603 (1762).

This is Wordsworth's Moss Campion, of which he wrote with his accustomed charm and love of nature

"Upon its native bed

.....
There, cleaving to the ground, it lies
With multitude of purple eyes,
Spangling a cushion green like moss".

Actually, within our area, the petals vary from purple through different shades of pink to almost white, giving a series of forms which, however, scarcely seem worth distinguishing from one another. As is the case farther south in eastern North America (cf. Fernald and St. John 1921, p. 119), the typical form with "les capsules...deux fois aussi longues

que le calice" and the peduncle usually exceeding the latter in length, seems to be absent from our region, all the material that I have seen being "floribus breviter pedunculatis, caespite vix emersis...capsulis calyce paulo longioribus", and hence referable to

var. *exscapa* (All.) DC., Fl. Franç. IV, p. 749 (1805).

Silene acaulis is an extremely interesting and not unimportant plant. In the Far North (especially, as I have noted, in Spitsbergen) its domed tussocks so regularly flower only on the south-facing side as to afford an admirable compass.¹ Much farther south these same tussocks may in some regions afford on gravelly river banks the only conditions favourable for the growth of willows.²

General Distribution. The whole species two-thirds circumpolar, stretching across Europe and America, but absent from Asia except in the extreme east. Alpine and arctic, including the highest latitudes where there is land. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 235).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Common almost everywhere, and often abundant—especially on open, windswept areas near the sea. Almost ubiquitous, occurring on practically all types of soil and as a subsidiary species in many different associations, but rare in marshes and other luxuriant communities. Its close tussocks may be anything up to 40 cm. in diameter and 20 cm. in height, and generally flower and fruit abundantly. All var. *exscapa*:

1. ELLESMERE: c. everywhere—numerous records from almost all localities.
2. DEVON, ETC., ISLANDS: f. *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6. *Somerset Island*, Port Kennedy, Walker 1858 (K).
3. N. BAFFIN: c. *Bylot Island*, Button Point, Wilcox 1928 (O); Mitimatalik, Mathiassen 1923 (C); Pond Inlet, Borden 1904, and five others (O,M,C); Arctic Bay, Polunin 1936; Cape Hallowell, Freuchen 1922 (C).
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from all the major islands.
10. W. COAST HUDSON BAY: c. Whale Point, Comer 1894 (G); Fullerton, Borden 1904 (O); Depot Island, Comer 1893 (G); Chesterfield, Burwash 1926 (O), Malte 1928 (O,G,C), Polunin 1936, (Gardner 1937, p. 37); "Mouth of Maguse River" (Güssow 1933, p. 117).

126. *Lychnis furcata* (Raf.) Fernald in Rhodora XXXIV, p. 22 (1932).

Lychnis (*Wahlbergella*) *affinis* of American authors

Melandrium (*Melandryum*) *affine* of American authors

Lychnis pauciflora of authors, not Ledeb. (See Hultén 1928, p. 91)

With reference to the generic name here used I must quote that very careful student of the Caryophyllaceae, the late Prof. B. L. Robinson, who wrote (1893, p. 147) concerning *Melandrium* and *Eulychnis* that "The

¹ See Polunin 1939d—photo. on p. 353.

² Cf. Polunin (1936, p. 384).

separation of these sections in the American species is not practicable, as the inflation of the calyx and toothings of the capsule are not sufficiently definite or constant characters".¹ A mere glance at the voluminous synonymy and notes given by such recent authors as Sørensen (1933, pp. 27 *et seq.*) will indicate how involved, in spite of its small compass, is the group to which this plant belongs. The taking up of the present species may help to straighten things out, although a more complete and thorough revision is still badly needed.

Lychnis furcata is with us a very variable plant. Thus the mature fruiting axes may be either single or much branched, and anywhere from 5 to more than 40 cm. in height; but these extremes frequently occur in the same region, and hence this variation is probably to be taken merely as an indication of the sensitivity of the species to local habitat conditions. It also varies considerably in the thickness and rigidity of the axes, in the size and shape of the capsules, and in the size of the seeds. Of forms that are fairly well marked in our area, but scarcely deserving of names, I will mention:

(1) Some material from the Hudson Strait region (e.g., Malte 1933 No. 126852, Lake Harbour, Baffin Island) in which the nerves on the calyx are unusually narrow, and greenish purple instead of dark purple as stated by Fernald (1932, p. 23). Indeed the width and colour of these veins appear to be very variable characters within the species.

(2) Individuals sometimes occur with the calyx markedly inflated, after the manner of *L. apetala*, and possibly due to hybridization with that species, as is also suggested by the fact that

(3) almost all stages of transition to *L. apetala* are to be found in several parts of our area, although normally the two species are abundantly distinct. The distinction is clear right from the seedling stage, as I have seen from specimens propagated for me in the Harvard Botanic Garden, *L. apetala* having long and slender cotyledons with especially long petioles and narrow laminae, whereas *L. furcata* has the cotyledons broader in proportion to their length and the petioles much shorter. Seed of *L. affinis* s.str. from Churchill a little to the south of our area produces seedlings that are still more squat, the cotyledons being very broad and having obtuse ends.

General Distribution. Arctic and subarctic eastern North America, including Greenland. Possibly much more widespread, as almost typical specimens have been seen from western Arctic America and from Spitsbergen, and the series that they form with *L. affinis* s.str. is circumpolar. Northernmost record 82° 30' N. in Grant Land, Ellesmere (Capt. R. Bartlett 1908, specimen in Herb. Kew).

E. Arctic Distribution. Very widespread, and perhaps almost complete on ice-free land, but not yet recorded from the mainland parts of Melville Peninsula or from the west coast of Hudson Bay, where its place is apparently taken by *L. affinis* s.str.

¹ I might almost as well have quoted the late Prof. C. H. Ostenfeld, who quite openly says (1923, footnote on p. 173) "I follow the majority of authors by using the genus name *Melandryum* for the plant dealt with, but I admit it is not well defined as distinct from *Lychnis*" Thus at the best these sections are segregated as genera merely for the sake of convenience.

Occurrence. Generally rather infrequent, at least locally. Grows chiefly in dry areas of mineral soil, especially around settlements and rookeries, in various communities both open and closed.

1. ELLESMERE: c. almost everywhere—numerous records from many different parts, incl. *Lady Franklin Bay*, Greely (G) 25 reported as "*L. triflora*" (Greely 1888, II, p. 13), ? *Discovery Harbour*, Hart (B) as "*L. affinis* var. *triflora*" doubtful spec., ? *Buchanan Bay* (Turnstone Beach), Feachem 1937, doubtful spec.
2. DEVON, ETC., ISLANDS: f? *Devon Island*, Dundas Harbour, Polunin 1936; *Beechy Island* and neighbourhood, Lyall 1854 (K,S*) as "*L. apetala*".
3. N. BAFFIN: c. Pond Inlet and near, Freuchen 1922 (C) 851, Mathiassen 1923 (O,C) 796, Bazin 1935 (O,M), ? Polunin 1936 doubtful spec. *Admiralty Inlet*, Arctic Bay, Polunin 1936; Saputit, Mathiassen 1922 (C) 115; Gifford Fiord, Freuchen 1922 (C) 122; Cape Hallowell, Freuchen 1922 (C) 52.
4. C. BAFFIN: c. "Kivitung" (Boas ex Ambronn 1890, p. 97); Cape Searle, Taylor 1860 (K*,B). *Cumberland Gulf*, Taylor 1860 (K) as "*L. apetala*", (Boas ex Ambronn 1890, p. 97); 'Quickstep Harbour', Kumlien 1878 (G,N) *fide* Fernald; Pangnirtung, Soper 1924 (O), Malte 1927 (O,G,C) 118754 118755 118756, Polunin 1934 and 6, Turner 1934 and 5 (K); Blacklead Island Soper 1924 (O); Kingnait, Taylor 1861 (specimen in Herb. Edinburgh) as "*L. apetala*?"
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G,K,C) 262 *fide* Fernald, Palmer 1929 (P) 642439; Point Brewster, Potter 1937; Ward Inlet, Knapp 1932; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927, 8, and 33 (O,G,C) 118767 118768 120305, also 126852 atypical, Polunin 1934 and 6; Cape Dorset, Soper 1926 (O), Malte 1928 (O,G,C) 120395 120405, Polunin 1934 and 6.
6. MELVILLE PENINSULA: l? *Vansittart Island*, Bangsted 1923 (C) 411; ?Danish Island, Freuchen 1922 (C) 207.
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O,C? *pars*) 25023a as "*L. apetala*"; ? Burwell, Polunin 1936.
8. N. QUEBEC: c. Diana Bay, Knapp 1936; Cape Wales, Bell (O,B *pars*) 264 34321 incl. as "*L. apetala*"; Stupart Bay, Payne 1886 (T) 22 as "*L. alpina*"; Wakeham Bay, Johansen 1927 (C, *pars*) 1167, Malte 1927 and 33 (O,G) 118769, Polunin 1936; ? King George Sound, Bell 1897 (O) 18722 doubtful spec.; Sugluk, Malte 1933 (O,G) *fide* Fernald, Polunin 1936; Wolstenholme, Low 1898 (O,N) 23533 as "*L. apetala*", Johansen 1927 (C) 1025, Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r? *Southampton Island*, South Bay, Sutton 1930 (G) *fide* Raup, Polunin 1936.

127. *Lychnis triflora* R. Br. in Ross' Voy. Disc., Appendix, p. cxlii (1819).
Melandrium triflorum (R. Br.) J. Vahl emend. Reg. and Til.

Whether this plant, previously thought to be endemic to Greenland, is conspecific with *L. furcata* I am not at the moment prepared to say, but pending a thorough revision of the arctic forms of this group it seems best, especially in view of the complicated nomenclatural problems involved, to uphold it as a microspecies that nevertheless hybridizes freely with its closest relatives. Sørensen (1933, pp. 27 *et seq.*) devotes no less than five and a half well written pages to a presentation of some of the problems involved—but without, as far as I can see, settling any of the major questions at issue. He points out that the seed characters are quite unreliable, but seems to have entirely neglected *L. furcata*—See Fernald (1932, pp. 22 *et seq.*).

Lychnis triflora has more than once been reported from Ellesmere, where indeed a survey of its distribution might lead us almost to expect it, but all the specimens of this group that I have seen from the northernmost parts of our area come closer to other species, even if Hart's from Discovery Harbour, cited above under *L. furcata*, is still rather reminiscent of *L. triflora*.¹ Hence, I am following Simmons (1906, p. 126, and cf. his "Phytogeography", 1913, from which he excludes it altogether), who must have known this plant from his explorations on the Greenland side of Smith Sound (cf. 1909, p. 81), in regarding it as probably absent from Ellesmere. However, during the Canadian Eastern Arctic Expedition of 1936, Mr. S. C. Knapp of the Hudson's Bay Company showed me a fairly typical specimen that he had collected in 1934 at "River" Clyde on the east coast of Baffin, and the same year it was found (*fide* Mr. A. J. Wilmott) in the closely adjacent Isabella Bay by Sir John Hanham, Bart., of Mr. J. M. Wordie's expedition.

General Distribution. Arctic regions of eastern North America (East and West Greenland and the east coast of Baffin). Northernmost record probably c. 78° 40' N. in Inglefield Land, West Greenland (J. Noe-Nygaard, Jubilee Expedition 1920-3—specimen in Herb. Gray).

E. Arctic Distribution. Known only from Clyde and Isabella Bay on the east coast of Baffin.

Occurrence. Evidently local and rare. Ecology said to be similar to that of the preceding species, which prefers habitats drier but richer than those typically favoured by the generally much commoner *L. apetala* (q.v.).

4. C. BAFFIN: r. Clyde, Knapp 1934; Isabella Bay, Hanham 1934 (B).

128. *Lychnis affinis* Fries, Nov. Fl. Suec. Mant. III, p. 36 (1842)—not (J. Vahl) Fries.

L. Taylorae Robinson

Melandrium affine of European authors, not J. Vahl

Wahlbergella affinis Fries

According to Fernald (1932, pp. 22 *et seq.*), this plant is specifically distinct from the one of eastern North America that is usually given the same name and credited to Vahl, but which we have treated above as *L. furcata*. However, the abundant material I collected in the summer of 1936 at Churchill on the west coast of Hudson Bay has exactly the small capsules, narrow nerves on the calyx, and broadly winged seeds of *L. affinis* Fries, being moreover inseparable from examples of this species gathered in northern Scandinavia, as Prof. Fernald was kind enough to confirm for me. Thus *L. affinis* s.str. appears to grow not only to the south of but also within our Eastern Arctic area. For although the material is so scanty and poor that I cannot be absolutely certain of the identifications, there are specimens from Cape Eskimo and Chesterfield on the west coast of Hudson Bay that it seems fairly safe to refer here. The same is true of two scraps

¹ Also reminiscent of *L. triflora* in its extreme hairiness, but otherwise coming nearer to *L. furcata*, with which it is tentatively cited above, is a specimen with peculiar large petals collected recently by R. W. de F. Feachem in Buchanan Bay.

from Southampton Island (which also in other ways shows a close "western" affinity), although in this case I prefer to retain a query, as the specimens are a little reminiscent of some phases of what I have elsewhere taken to be intermediates (hybrids?) between *L. furcata* and *L. apetala*. These specimens from within our area all have the capsules rather long and slender for *L. affinis*, but, as I have said, seem to belong to this species—as also does *L. Taylorae* Robinson, on the type sheet of which in the Gray Herbarium Ostenfeld has scribbled "*L. pauciflora* Ledeb... 1924" (cf. above, under *L. furcata*).

General Distribution. Apparently two-thirds circumboreal, stretching from northwestern Europe across Asia and western North America at least to the west coast of Hudson Bay. Less "arctic" than the closely related *L. furcata*, occurring in Scandinavia northwards only to the vicinity of Alten, c. 69° 58' N. in Norwegian Lapland (Norman 1894, p. 205, sub nom. *Wahlbergella affinis*), which may perhaps be the northernmost station, although this is not definitely determinable owing to confusion with *L. furcata*, which may yet prove to inhabit a circumpolar zone to the north of *L. affinis* s.str.

E. Arctic Distribution. So far known only from the mainland regions of the west coast of Hudson Bay in the extreme southwest, and doubtfully from Southampton Island.

Occurrence. Occasional in its very limited area, growing at Chesterfield chiefly on patches of more or less open soil in sheltered situations. Farther south at Churchill it is common in a number of different habitats varying from dry sandy plains to damp and shaded areas among rocks, where a slender attenuated phase develops that is inseparable from the type of *L. Taylorae* Robinson, which I, therefore, reduce outright to synonymy.

(ISLANDS IN HUDSON, ETC., BAYS: ? Southampton Island, South Bay, Polunin 1936 Nos. 2274 2292 doubtful specimens.)

10. W. COAST HUDSON BAY: o. Chesterfield, Gardner 1933 (G) as "*L. furcata*", Polunin 1936; Rankin Inlet, Macoun 1910 (O,G) 79080; Cape Eskimo, Macoun 1910 (O) 79079.

129. *Lychnis apetala* L., Sp. Pl. ed. 1, p. 437 (1753).

L. nesophila Holm

Melandrium (Melandryum) apetalum (L.) Fenzl

Wahlbergella apetala (L.) Fries

Apart from occasional specimens that appear transitional to *L. furcata* (See above, and cf. Gelting 1934, p. 48), this species is very distinct from the other members of the group, although again very variable in a number of characters. However, the forms produced scarcely seem worth enumerating, much less describing; suffice it to say that they are mostly concerned with variations in the hairiness and erectness of the pedicels, the exsertion of the petals, and the size and shape of the calyx and ripe capsule. Even the f. *arctica* (Fries) n. comb. "pedunculis dense cinerascens...petalis sub anthesi exsertis..." (*Wahlbergella apetala* (L.) Fries β *arctica* Fries, Tillägg till Spetsbergens Fanerogam-Flora, p. 133 (1869)) seems only doubtfully worth distinguishing among the maze of forms occurring in our area, although in places it stands out rather well.

It will be noticed that I have reduced outright to synonymy *Lychnis nesophila* Holm, of whose true identity I have not the slightest doubt now that I have seen the type (from Mansel (Mansfield) Island, Hudson Bay) in the National Herbarium of Canada. This type is merely one of those unfortunate specimens that have attained ecesis too far in towards the centre of a snowdrift area, where they are left free of snow so late in the summer that they become dwarfed and, at least after a few years of such treatment, more or less abortive. Thus the type specimen was, according to the label, collected on August 30 when other plants would be in fruit, yet it is only just coming into flower. By its side the late Prof. B. L. Robinson has written "This is a very doubtful specimen. I have taken the liberty of looking into one flower. It was sterile and had *four* abortive carpels. The anthers are purplish, which may indicate the presence of *Ustilago antherarium*."

Holm (1922, p. 23B) must also stand corrected in his statement that *L. affinis* is smaller than *L. apetala*, the reverse being much more often the case. Indeed I have rarely, among many hundreds and perhaps thousands of specimens encountered in the field, observed a plant of *L. apetala* that much exceeded 20 cm. in height, and the vast majority are only some 10 cm. or less high.

General Distribution. Circumpolar; all over the Arctic. Northernmost record, Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 233).

E. Arctic Distribution. Probably almost if not quite complete on ice-free land, but possibly absent from some parts of the extreme southwest.

Occurrence. Common almost everywhere and often quite abundant, especially in the Far North. Flowering and fruiting early and well. When flowering it can strike the arctic traveller as being one of the most attractive of all plants, with its large and almost globular, solitary "balls" nodding from axes that seem to rise straight out of the inhospitable clay or gravel surfaces on which it abounds. It has a wide range of tolerance to most of the locally variable environmental conditions, but prefers moist habitats that are not too overgrown by other plants, as it is by no means strongly competitive. Never noted as having any particular ecological significance or importance, but rather as one of those species that at the least is generally to be found "somewhere around," and at the most may take its place as a purely subsidiary component of the vegetation, or sometimes make more of a "show" on otherwise almost barren areas.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. Deserted Village, Hart 1875 (B) as "*L. apetala* var. *triflora*", Cape Sabine, Feilden 1875 (B) as "*L. apetala* var. *triflora*."
2. DEVON, ETC., ISLANDS: c. *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C) 118773 118774, Polunin 1934 and 6; "Cape Riley" (McClintock ex Markham 1909, p. 246); Beechy Island, Lyall 1854 (K,S*); 'Wellington Channel', Lyall 1853 (K,S*). *Cornwallis Island*, Assistance Bay, Sutherland 1851 (K). *Somerset Island*, Parry (B); Fury Beach, Markham (K*); Port Kennedy, Walker (K*).¹
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.

¹ I have recently seen a duplicate specimen in Herb. Edinburgh.

4. C. BAFFIN: c. Clyde, Polunin 1934 and 6; "Kivitung" (Boas ex Ambronn 1890, p. 97); Cape Searle, Taylor 1860 (K). *Cumberland Gulf* (Kumlien 1879, p. 164); Nettilling Lake, Soper 1925 (O); Koukdjuak River, Soper 1925 (O). *West Coast*, Camp Kungovik, Soper 1929 (O).
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities, incl. *Vansittart Island*, Mathiassen 1921 (C) as "*Melandrium affine*."
7. N. LABRADOR: c. everywhere—numerous records from almost all localities.
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Cape Wales, Bell 1884 (B, pars) 264; Stupart Bay, Payne 1886 (T); Wakeham Bay, Malte 1933 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Johansen 1927 (C) 1024, Polunin 1936; Digges Island, Bell 1884 (O); Hyla, Bell 1885 (O) as "*L. nesophila*"; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. Mansel Island, Bell 1884 (O) 2621 type of "*L. nesophila*"—also (N).
10. W. COAST HUDSON BAY: r? Chesterfield, Polunin 1936.

130. ***Lychnis alpina* L.**, Sp. Pl. ed. 1, p. 436 (1753).

Viscaria alpina (L.) D. Don

Although it is well known to the south, this attractive species has only once been found in our area—by Sir William MacGregor, then Governor of Newfoundland, in 1905.

General Distribution. ? European, transgressing into eastern North America and western Asia. Chiefly alpine and subarctic. Northernmost authenticated record Cape Humboldt, 73° 10' N. in East Greenland (Vaage ex Sørensen 1933, p. 37), but possibly extending to Wolstenholme Sound, c. 76° N. in West Greenland (Sutherland, specimen in Herb. Univ. Toronto), although this is to be queried (cf. Polunin 1936b, p. 412).

E. Arctic Distribution. Known only from a single collection on "Chidley Peninsula, Labrador, 60°-60° 30' N."

Occurrence. Evidently very rare—a striking plant, which would scarcely be overlooked. I have not seen it growing within or quite near our area, but know it well enough in Labrador farther south, in southwest Greenland, and in Iceland and Lapland, in all of which places it grows in a considerable range of habitats, even if it prefers poorly vegetated areas of well-drained but damp, sandy soil. The single specimen from our area is about 20 cm. high and has flowered well.

7. N. LABRADOR: r. Chidley Peninsula, MacGregor 1905 (K).

131. ***Cerastium alpinum* s.l. (L., Sp. Pl. ed. 1, p. 438 (1753)).**

This is a *typus polymorphus* of the worst order. Thus Simmons, concerning Ellesmere alone, wrote of it (1906, p. 120) as "a very variable species, appearing in different forms according to the habitat... The differences between the extreme forms, which [are] very unlike each other, are however in a greater material obliterated by a great number of intermediate variations." Again on page 121 Simmons writes "The many forms of *C. alpinum* are generally directly due to the conditions under which they

live, as I am certain after having studied them from nature..." Nevertheless, Simmons goes on to distinguish several variations and forms; but now, with my still more abundant material from a much wider area, I find it "more convenient to maintain a widely embracing and variable *C. alpinum* than a number of indistinguishable and problematic subspecies" (Gelting 1934, p. 35).¹

The vast majority of specimens from within our area are more or less glandular and also more or less lanate, and thus come nearest to var. *glutinoso-lanatum* Facchini in the scheme given by Fernald and Wiegand (1920, p. 172). These characters are, however, so lacking in constancy that, with others of which one has learned to expect greater conservativeness also varying in my material, I prefer not to take up this name more definitely, although specimens have indeed been cited as belonging to it from within our area. Also from within our area, chiefly in the extreme south, come plants that are covered with a long white tomentum and have been named and often cited as var. *lanatum* (Lam.) Hegetschw.; but under the binoculars they may in all but a few cases be seen to be somewhat glandular, and hence not strictly referable to this variety. However, at Port Burwell and perhaps elsewhere in the extreme south of our area, there occur specimens that are neither glandular nor lanate, and hence seem referable to the head form, "var. *legitimum* Lindblom."

General Distribution. Circumpolar; all over the Arctic. Northernmost record at the northernmost botanical locality on earth, viz., Lockwood Island, 83° 24' N. on the north coast of Greenland (Lockwood ex Simmons 1909, p. 79).

E. Arctic Distribution. Doubtless complete on ice-free land.

Occurrence. Very common almost everywhere. Has a range of tolerance probably as wide as any arctic plant with regard to water, snow-covering, exposure, and competition, and hence occurs in almost all types of habitat and community, from lowland marshes and late-snow areas to the driest and most exposed ridges. However, it is not often really abundant except quite locally on some "barren" areas of open soil or gravel. In the damper situations it is generally much less hairy; in dry places it develops an enormous system of long fibrous roots, and tends to be so heavily glandular that it gets very "dirty" with adhering particles of dust and sand. Although the axes may exceed 20 cm. in length and be sometimes almost upright, at least in the south, *Cerastium alpinum* is normally low and rampant, or, in exposed places, and especially in the Far North, rather closely pulvinate.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. as "*C. latifolium* L. (*C. caespitosum* Malmgren)" (Hart 1880, p. 205, and cf. Simmons 1906, p. 122).
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. "*Cornwallis Island, Assistance Bay*" (Sutherland 1852, II, p. clxxxix, sub nom. var. '*glabatum*').

¹ Taking these forms of *Cerastium alpinum* s.l. as his text, Scholander has recently put the matter still more strongly, saying (1934, p. 39) that "here as elsewhere we make ourselves insuperable difficulties by going farther in our division into so-called species than does our real power of differentiating warrant. Taxonomy, instead of being a help, becomes unmanageable and therefore loses its justification". All who have the true welfare of the subject at heart cannot but join with the ecologist or layman who has to use taxonomy and, at least in our present state of almost complete ignorance concerning the real workings and meaning of what we call life, heartily agree with Scholander.

3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.¹
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Lake Harbour, Malte 1933 (O,G) incl. 126858 126889 as "var. glanduliferum" and 126896 as "var. lanatum", north shore Hudson Strait, Bell 1897 (O) 18724 as "*Cerastium Fischerianum*", Cape Dorset, Soper 1926 (O) incl. var. *lanatum*.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. Lacey Island, Potter and Brierly, 1934 (G) 2721 as "var. lanatum", Burwell, Borden 1904 (O) 26929 var. *legitimum* (fide Fernald), Macoun 1910 (O,G,N) 79081 var. *legitimum* (fide Fernald—orig. as "*Cerastium arcticum*"), Polunin 1934 and 6 incl. var. *legitimum*, Lady Job Harbour, Potter 1937 No. 2720 var. *lanatum*, Bowdoin Harbour, Potter and Brierly 1934 (G) var. *lanatum*, Grenfell Tickle, Potter and Brierly 1934 (G) 2722 as "var. lanatum".
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Cape Wales, Bell 1884 (O) 4611 as "var. *Fischerianum*", etc., Stupart Bay, Payne 1886 (T) incl. 19 as "*Cerastium vulgatum*", King George Sound, Bell 1897 (O) as "*Cerastium Fischerianum*", Digges Island, Bell (O,G) incl. 34352 as "var. *Fischerianum*", Cape Smith, Malte 1928 (O,G,C) incl. 120909 as "var. lanatum".
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. Nottingham Island, Bell 1884 (O,G,B) 311 as "var. *Fischerianum*"; *Southampton Island*, South Bay, Sutton 1930 (G) as "var. *legitimum*" and "*Cerastium cerastioides*".
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Wager Bay, Macoun 1910 (O,G) as "var. *glutinoso-lanatum*", Chesterfield, Tyrrell 1893 (O) 34355 as "var. *glanduliferum*", Sutton 1930 (G) as "var. *legitimum*", Gardner 1933 (G) 139 as "var. *glanduliferum*".

Cerastium arcticum Lange (*C. Edmonstonii* (Wats.) Murb. and Ostenf.; *C. nigrescens* Edm.), *C. Fischerianum* Seringe, and *C. hyperboreum* Tolmatchew, have at one time or another been reported in the literature (or claimed in identification) as occurring within our area. All the material that I have seen belongs, however, to typus polymorphus *C. alpinum*—of which they are indeed such close relatives that all have at one time or another been claimed as conspecific. As no fully typical material of any one of them seems to have been found within our area, I have little hesitation in excluding them from our flora, making only the assumption that the one or two older specimens that have not been available for inspection belong also to *C. alpinum*² (cf. Gelting 1934, pp. 36 *et seq.*). Whether or not the above-named species can with any advantage be maintained as separate in their own centres of distribution I have not the knowledge to say; but it does seem clear that the plants of this group are so variable that, even if two types appear widely different, this fact does not necessarily entitle us to regard them as belonging to separate species.

¹ Incl. specimens in Herb. Edinburgh from Kingnait, Cumberland Gulf (coll. Taylor 1861), as "var. uniflorum" and "var. *Fischeri*".

² Or possibly to *C. Beeringianum* (q.v.).

132. *Cerastium Beeringianum* Cham. and Schl. in Linnaea I, p. 62 (1826).
C. alpinum L. var. *Beeringianum* (Cham. and Schl.) Regel

I must admit that I am still somewhat doubtful about the separability of this species and about its occurrence within our area, and moreover that I have used it as a sort of rubbish heap for certain specimens that I have not been able to understand—mostly scraps which, although clearly not referable to any of the other species nearby, were yet insufficient for exact determination or for their description as "new". Most interesting amongst these specimens is a rootless stem with one flower and two buds collected by Dr. Robert Bell, "Upper Savage Islands, Hudson Strait, August 15, 1884 (Geological and Natural History Survey of Canada No. 4620)". It was named in the first instance "*Cerastium alpinum* L. var. *glabratum* Hook.", the varietal name being later changed to "*Beeringianum* Regel" by John Macoun. This was corroborated by Prof. B. L. Robinson with a note in his own handwriting. Then over the top of it all has been written in black ink by Holm "*C. arvense* L. identical with specimens from Greenland (Warming and Holm)". *C. arvense* being even now claimed for Greenland only on the strength of this one record of Warming and Holm, the suggestion, of course, is that their material may belong instead to *C. Beeringianum*—else why should Holm cite a *Greenland* specimen?

There is also a sheet in Herb. Ottawa collected by Jas. M. Macoun at Rankin Inlet on the west coast of Hudson Bay, which was identified by Profs. Fernald and Wiegand as *C. Beeringianum*, and which was the evidence for their statement (1920, p. 173) of the occurrence of this species in Keewatin. The other specimens are more doubtful—Soper's from the west coast of Baffin having the leaves, and especially the sepals, so short as to be reminiscent of *C. Regelii* (q.v.), and mine from northern Baffin having solitary flowers and other features suggestive of *C. cerastioides*. Nevertheless, with the above-mentioned four recognized authorities on the North American flora supporting the view that *C. Beeringianum* occurs within our area, I feel that I need not have many further qualms about including it in the present treatise.

General Distribution. ? North America, transgressing into eastern Asia.¹ Northernmost record probably Arctic Bay, 73° 5' N. in Baffin (coll. Polunin 1936, but the specimens doubtful—See above).

E. Arctic Distribution. Probably widespread in the southern two-thirds, but only two records approach authenticity.

Occurrence. Rare, growing generally less than 10 cm. high and, in the cases of my specimens mentioned above, in damp, sheltered depressions having a good covering of snow in winter.

(N. BAFFIN: ? Arctic Bay, Polunin 1936 Nos. 2589 2590 apprg. *C. cerastioides*?)

(C. BAFFIN: ? West Coast, Camp Kungovik, Soper 1929 (O) 125993 apprg. *C. Regelii*?)

(S. BAFFIN: ? Upper Savage Islands, Bell 1884 (O) 4620 fide John Macoun and Robinson, but apprg. *C. arvense*?)

10. W. COAST HUDSON BAY: r. Rankin Inlet, Macoun 1910 (O) 79083 fide Fernald and Wiegand.

¹ Not western Asia, as stated by Fernald and Wiegand (1920, p. 173).

133. *Cerastium Regelii* Ostenfeld in Christiania Vidensk.-Selsk. Skr., I, Mat.-Nat. Kl. No. 8 (1909), p. 10 (1910).

C. alpinum L. f. *pulvinatum* Simmons

Now that this species has at last "caught on", it is being recognized from many places where it probably does not occur—at least, several of the relatively southern specimens that I have seen determined as *C. Regelii*, even if they have short sepals, look totally different from the typical plant so characteristic of damp clay plains in far northern Spitsbergen and Greenland. In most cases they probably belong to *typus polymorphus C. alpinum*, whereas others again appear to occupy a position intermediate between this series and true *C. Regelii*, further discussion of which would be superfluous in view of the excellent accounts recently given by Scholander (1934, pp. 42 *et seq.*) and Gelting (1934, pp. 39 *et seq.*). In conformity with the observation of Simmons (1906, p. 122), all my indubitable material of this species from the Far North is without flowers, apparently reproducing solely by vegetative buds, which drop off and take root after the manner of those of *Arenaria Rossii* (q.v.).

With the exception of two collections from Melville Peninsula, which it seems fairly safe to refer to *C. Regelii*, all the specimens from as far south as Baffin that I thought at first might be referable to this species must be kept as doubtful, as they approach forms of *C. alpinum* not only in the relatively long and hairy leaves but also in the longer sepals (they almost all flower). Probably they should be referred to *C. alpinum*, and indeed I only mention them here because they seem to be somewhat transitional to *C. Regelii*.

General Distribution. Circumpolar; chiefly high-arctic and not with absolute certainty known from anywhere south of the Arctic Circle, being one of the most exclusively high-arctic of all vascular plants. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 233, sub nom. *C. alpinum* f. *pulvinatum*).

E. Arctic Distribution. Chiefly in the northern third, occurring on ice-free areas throughout Ellesmere and southwards to Devon and Somerset Islands. With little doubt also in Melville Peninsula—and perhaps northern Baffin, where, however, no typical specimens have yet been collected.

Occurrence. In Ellesmere probably common, inhabiting damp open clay-fields and mossy ravines as in Spitsbergen; at Dundas Harbour rare and, as with the doubtful material from farther south, apparently confined to snowdrift areas.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, often as "*C. alpinum*".
2. DEVON, ETC., ISLANDS: f. *Devon Island*, Dundas Harbour, Polunin 1936; between Beechy Island and Northumberland Sound, Lyall 1852 (K); 'Wellington Channel', Lyall 1852 and 3 (K). ? *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T,K) as "*C. alpinum* var. *glabratum*". *Somerset Island*, Port Leopold, Malte 1927 (O,G,C) 118776 *fide* Ostenfeld, 118738 apprg. *C. alpinum*.

(N. BAFFIN: ? Arctic Bay, Polunin 1936, Nos. 2525 2548 2550 all apprg. *C. alpinum*?)

(C. BAFFIN: ? Clyde, Polunin 1936, No. 2592 apprg. *C. alpinum*?)

6. MELVILLE PENINSULA: r. Lyon Inlet, Angel 1933 (W) 78 as "*C. Beeringianum*"; between Cape McLaren and Cape Martineau, Angel 1933 (W) 60 as "*C. Beeringianum*".

134. ***Cerastium cerastioides*** (L.) Britton in Mem. Torr. Bot. Cl. V, p. 150 (1894).

C. trigynum Vill.

C. lapponicum Cr.

All my material of this species compares well with specimens from Europe. Within our area it appears to be confined to the eastern half of the extreme south, occurring plentifully around Burwell but more and more sparingly as we go westwards, until it is rare at Sugluk, the most westerly known station in North America. Its discovery on Akpatok Island (Polunin 1934, p. 204, sub nom. *C. trigynum*) constituted the first record from the Arctic Archipelago. In our area it is always small, and insignificant except when flowering—hence probably often overlooked. My material does not show any significant degree of variation.

General Distribution. ? European, transgressing into eastern North America and western Asia. Chiefly alpine and subarctic. Northernmost record Cape Franklin, 73° 15' N. in East Greenland (Seidenfaden ex Gelting 1934, p. 45).

E. Arctic Distribution. Apparently confined to the eastern half of the extreme south, including Akpatok Island—See above.

Occurrence. Common in the extreme southeastern corner, generally rare farther west. Chiefly characteristic of the poorly vegetated inner zones of late-snow areas and of the sheltered mossy beds of rocky ravines, but occurring in almost any damp spot, and often on open, clayey soils. A weak plant, creeping or barely ascending, and the very reverse of aggressive or important as a component of vegetation.

7. N. LABRADOR: c. Cape Chidley, Bell 1884 (O,B) 313; Burwell, Hantzsch 1906 (D*) as "*Stellaria cerastioides*", Malte 1927 (O,G,C), Porsild 1930 (O*), Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G, pars) incl. 2758 as "*Stellaria crassifolia*".

8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936.

9. ISLANDS IN HUDSON, ETC., BAYS: l. Akpatok Island, Polunin 1931 (B).

135. ***Stellaria longipes*** Goldie in Edin. New Phil. Jour. VI, p. 327 (1822).

S. laeta of authors

S. Edwardsii of authors

Alsine longipes (Goldie) Coville

This, one of the very commonest plants almost throughout our area, is also one of the most variable. Except concerning the colour of the capsule and glaucosity of the leaves—which characters may change completely without any obvious cause—I agree with Scholander (1934, p. 49) that "the habitat seems to be largely responsible for most of the variations", and hence will not discuss more than the two that are the best marked in our area.

(1) In dry and exposed situations, occasionally as far south as the Hudson Strait region but chiefly in the Far North, the plants tend to be condensed to low tufts, with short pedicels and internodes and the leaves hard and smooth-surfaced but having rigid, sharp-pointed apices. Such plants are generally named var. *humilis*, and indeed may appear very different from the head form; but since reversion to the latter can be seen almost everywhere that conditions allow, it seems better to term it

f. *humilis* (Fenzl) Ostenfeld ex Groentved, Vasc. Pl. fr. N. America, p. 39 (1936).

(*Stellaria longipes* Goldie γ *humilis* Fenzl in Ledeb., Fl. Ross. I, p. 387 (1842).)

This is part at least of what Robert Brown meant by his *Stellaria Edwardsii*, as can be confirmed on examination of specimens collected during Parry's second voyage and named by Brown himself. However, it should be mentioned that the type sheet of *S. Edwardsii* in the British Museum includes some specimens of almost typical *S. longipes*.

(2) Most of the material from places in the extreme southwest of our area is more upright and has much longer and narrower leaves than the head form, approaching a form that occurs in full development at Churchill just outside our area, and has been described from farther west as a separate species, *Stellaria subvestita* Greene. However, there can be no doubt that this is better considered as a form of *S. longipes* and, as it has true geographical delimitation and occurs in some places apparently to the exclusion of the head form, I propose it as

var. *subvestita* (Greene) n. comb.¹

(*Stellaria subvestita* Greene in Ottawa Naturalist XV, p. 42 (1901); *Alsine subvestita* Rydb.)

The capsules, which Greene did not see, may be noted as essentially those of the head form. Greene's poor description must also be emended to include plants less than 5 cm. high, and with leaves having lengths other than " $\frac{3}{4}$ inch long".

I should perhaps also mention the very glaucous var. *laeta* (Richardson) S. Wats., with which a number of authors have attempted to operate. It does not appear to me to have any ecological or immediate taxonomic significance; but of course cytological investigations may one day demand a revision of this view.

General Distribution. Circumpolar; all over the Arctic. Northernmost record from almost the northernmost botanical "locality" on earth, viz., Frederic E. Hyde Fiord, 83° 15' N. on the north Coast of Greenland (Colonel I. P. Koch ex Ostenfeld and Lundager 1910, p. 19).

E. Arctic Distribution. Doubtless complete on ice-free land.

¹ I have already seen at least one herbarium sheet so named, but cannot remember by whom, if indeed there was any indication. At all events the combination does not seem to have appeared in print.

Occurrence. Plentiful almost everywhere, and especially abundant on damp manured areas around rookeries and habitations, where it frequently forms a luxuriant mat. It has, however, a wide range of tolerance to changes in almost all environmental conditions, and thus occurs in many different habitats and communities, including sometimes the driest and most exposed ridges. Here it is almost always reduced to *f. humilis*, 2-4 cm. high, but elsewhere is most often around 7 cm. high. Flowers late and often fails to ripen seed, but propagates vegetatively by means of subterranean runners and, according to Porsild (1932, p. 29) who mentions it as "the most pertinacious and troublesome weed" in Greenland, from detached shoots having "small green buds able to sprout".

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. North Coast, Floeberg Beach, Feilden (K) *f. humilis*, Grant Land 82° 27' N., Wolf 1906 (N) as "*Alsine Edwardsii*"; Discovery Harbour, Hart (specimen in Herb. Edinburgh) as "*Cerastium trigynum*"; Craig Harbour, Polunin 1934 and 6 incl. *f. humilis*.
2. DEVON, ETC., ISLANDS: c. "North Kent" (Simmons 1909b, pp. 19 and 20). Devon Island, "Mount Belcher, Cape Vera, West Fiord" (Simmons 1909b, pp. 7 et seq.); Dundas Harbour, Soper 1923 (O) incl. *f. humilis*, Malte 1927 (O,G) *f. humilis*, Polunin 1934 and 6 incl. *f. humilis*; Powell Creek, Lyall 1852 (K) *f. humilis*; Beechy Island, MacMillan 1908 (O) as "var. *laeta*"; between Beechy Island and Northumberland Sound, Lyall 1852 (K) *f. humilis*; 'east side Wellington Channel', Lyall 1852 (K). Cornwallis Island, Ede 1851 (T) *f. humilis*; "Assistance Bay" (Sutherland 1852, II, p. clxxxix). Somerset Island, Parry 1825 (specimens in B and Herb. Edinburgh); Port Leopold, Malte 1927 (O,G); Elwyn Inlet and Fury Beach, Markham (K).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Pond Inlet, Polunin 1936 incl. *f. humilis*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Cape Searle, Taylor 1860 (K) as "*Stellaria Edwardsii*"; Cumberland Gulf, Kingnait, Taylor 1860 (K,B) as "*S. Edwardsii*".¹
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Signuia near Cape Haven, Schuchert and White 1897 (G,N) as "*Alsine longipes*", Cape Dorset, Soper 1926 (O) incl. *f. humilis*, Polunin 1934 incl. *f. humilis*.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities, incl. no loc. Parry (B) as "*Stellaria borealis*", Neerlo Nakto, Parry (B) *f. humilis*, Igloolik, Hooper 1822 (L) *f. humilis*, Edwards (B) as "*S. borealis*" and so cited by Simmons (1913, p. 77, sub nom. *S. calycantha*), Parry 1822 and 3 (B) as "*Stellaria Edwardsii*". Named after Mr. Edwards, late surgeon of the Fury, Angel 1933 (W) 90 as "*S. borealis*", Winter Island, Angel 1933 (W) 85 as "*Stellaria crassifolia*", island between Cape McLaren and Cape Martineau, Angel 1933 (W) 61 as "*Stellaria borealis*".
7. N. LABRADOR: c. Chidley Peninsula, MacGregor 1905 (K); Burwell, Borden 1904 (O), Johansen 1927 (C), Malte 1927 (O,G,C), Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Cape Wales, Bell (G,B) as "var. *minor*", Stupart Bay, Payne 1886 (T) as "var. *laeta*", Wakeham Bay, Malte 1933 (O) incl. *f. humilis*, Polunin 1936 incl. *f. humilis* and 1453 apprg. var. *subvestita*, Eric Cove (Wolstenholme), Low 1898 (G,N) *f. humilis*, Digges Island, Bell 1884 (O,G,B) incl. *f. humilis*.

¹ Taylor (1863, pp. 326-7) also reports *Stellaria stricta* and *S. laeta* from these regions, but his Greenland specimens so named in the London Herbaria, and others from our area that I have recently seen in Herb. Edinburgh, indicate that the present species was meant.

9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all the islands, incl. Nottingham Island, Bell 1884 (O,G) f. *humilis*, Johansen 1927 (C) f. *humilis*, Mansel Island, Leechman 1936 incl. 2255 form with tiny capsules; Southampton Island, White Island, Angel 1933 (W) 34 f. *humilis*—orig. as "*Stellaria crassifolia*", "York Bay" (Parry ex Hooker 1825, p. 390, sub nom. *S. Edwardsii*), South Bay, Polunin 1934 and 6 incl. f. *humilis*, Cape Low, Angel 1933 (W) 23 f. *humilis*—orig. as "*Stellaria crassifolia*".
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Roes Welcome south of Wager Bay, etc., Freuchen 1922 and 3 (O,C) incl. f. *humilis*, Depot Island, Comer 1893 (G) f. *humilis*, Freuchen 1923 (C) f. *humilis*, Chesterfield, Polunin 1936 incl. 2107 2124 apprg. var. *subvestita* and 2198 form with tiny capsules.

136. *Stellaria borealis* Bigel., Fl. Bost. ed. 2, p. 182 (1824).
S. calycantha Bong.

All previous reports of this species from within our area belong instead to *S. longipes*, as I have confirmed by the only certain method of examining the specimens on which they were founded. However, although it consisted of only a few purely vegetative scraps that I took early in the summer of 1936 at Burwell, there can scarcely be any doubt about the identity with *S. borealis* of the one collection cited below. Like the specimens occurring "all along the line" to the south of our area, these plants appear to belong to the head form rather than to any of the varieties given by Fernald (1914b, p. 150).

General Distribution. ? Possibly circumboreal, but this very doubtful owing to confusion with other types (cf. Hultén 1928, p. 64). According to Dahl (1934, p. 317) it has its "Nordgrense på Magerøya, 71° 10-11' " N. off the north coast of Scandinavia.

E. Arctic Distribution. So far recorded only from Port Burwell in the extreme southeast.

Occurrence. Very rare; the only collection growing on the bank of a streamlet by the site of an old Mission House—hence apparently nitrophilous and just possibly introduced. Farther south the species grows chiefly in damp places dominated by rather rank herbs, and in southwest Greenland most characteristically in open places in the birch and willow thickets.

7. N. LABRADOR: r. Burwell, Polunin 1936.

137. *Stellaria crassifolia* Ehrh. in Hannover. Mag. 8tes St., p. 116 (1784)¹.
Alsine crassifolia (Ehrh.) Britton

This species, like so many that are insignificant and of saline or otherwise restricted habitat, had until recently been entirely overlooked in our area, where actually it is so plentiful that I have even been able to glean records from chance scraps included in specimens of other plants collected as long ago as 1884. Nevertheless, it has only just (Polunin 1938, p. 8) been recorded as "new" for our area, and also for the entire Arctic Archipelago.

¹ I have not been able to check this citation.

Stellaria crassifolia varies in our area considerably in the size, shape, and texture of the leaves, and indeed of the whole plant. It is a weak little thing, more or less prostrate when growing alone, but more often forming a dense sward with other plants, when it rises generally some 10 cm. above the surface of the ground.

General Distribution. Circumboreal, except that it is apparently absent from Greenland. Chiefly subarctic and north-temperate, having its "Nordgrense på Magerøya, 71° 10-11'" N. off the north coast of Scandinavia (Dahl 1934, p. 319).

E. Arctic Distribution. Widespread in the extreme south (general at least around coasts), including the southernmost parts of the Arctic Archipelago, but not yet found north of the 65th parallel.

Occurrence. Fairly common throughout its limited area. Grows chiefly on the seashore or about human habitations or ruined igloos, characteristically forming a soft sward mixed with other small plants such as *Koenigia islandica*, *Montia lamprosperma*, *Cochlearia* seedlings, and *Ranunculus hyperboreus*. Apparently somewhat halophilous. Flowering rather sparingly in the northernmost stations, but abundantly farther south.

5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K) as "*S. gracilis*"; Burwell, Malte 1927 (O,G), Porsild 1930 (O*); Grenfell Tickle, Potter and Brierly 1934 (G, *pars* with *Montia*, *Koenigia*, *Catabrosa*, etc.) 2758 3188.
8. N. QUEBEC: c. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Digges Island, Bell 1884 (O) as "*Stellaria humifusa*"; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Mansel Island, Bell 1884 (O, *pars* with *Koenigia islandica*) 23460. *Southampton Island*, South Bay, Malte 1928 (O,G), Manning 1934, Polunin 1934.
10. W. COAST HUDSON BAY: 1? 'Point Look Out', Herd (K); Chesterfield, Gardner 1933 (G, *pars*), Polunin 1936.

138. *Stellaria humifusa* Rottb. in Skr. Kjøbenhavnske Selsk. Laerd. Vidensk. X, p. 447 (1770).

Like most of our saltmarsh plants this species varies considerably with local habitat conditions—particularly in the size and shape of the leaves and other vegetative parts. Most of the specimens are referable to phases of "*β ovalifolia* Fenzl," which according to Fenzl's own synonymy (in Ledebour I, 1842, p. 384) includes the plant originally described by Rottböll. Some of the specimens from the south, however, have much longer leaves and larger flowers, and almost match the North Pacific var. *oblongifolia* Fenzl. But this extreme is not quite reached, and, the series being, moreover, continuous with the usual form, it seems safer not to take up any varietal names in our area—where indeed it is only with difficulty that any entity can be separated from the general run of material (cf. also Hultén 1928, p. 67).

General Distribution. Circumpolar; coasts of arctic and subarctic regions. Northernmost record Floraberget, c. 79° 58' N. in North-East Land, Spitsbergen Archipelago (Scholander 1934, p. 48). Found almost as far north in Ellesmere (Simmons 1906, p. 124).

E. Arctic Distribution. Probably complete around coasts, but not yet found in the northernmost parts of Ellesmere.

Occurrence. Plentiful on all coasts I have visited, and sometimes abundant and forming aggressive brownish mats, but generally not so much in evidence as *Puccinellia phryganodes*, in company with which it often grows. Apparently an obligate halophyte, never found away from the seashore or immediate influence of salt water. Occurs chiefly around high-water mark on beaches of damp mud or silt, but may also bind fairly coarse sand or gravel, in which case it is liable to take on a peculiar upright form. Often flowers less plentifully in the south than in the Far North, where I have frequently seen ripe fruits in Ellesmere and Spitsbergen during the first week of September. Axes more or less rampant, rooting at the nodes, the resulting mats being generally less than 10 cm. high.

1. ELLESMERE: o. *Hayes Sound*, "Skräling Island" (Simmons 1906, p. 124); Cocked Hat Island, Simmons 1899 (N,K,C). *South Coast*, Craig Harbour, Soper 1923 (O), Polunin 1934 and 6; "Musk-ox Fiord" (Simmons 1906, p. 124).
2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6. "Somerset Island, Port Kennedy" (Walker ex Hooker 1861, p. 82).
3. N. BAFFIN: o. Pond Inlet, Polunin 1934; Arctic Bay, Malte 1927 (O,G,C), Polunin 1936.
4. C. BAFFIN: c. "Cape Adair" (Taylor 1863, p. 327); Clyde, Polunin 1934 and 6; Cape Searle, Taylor 1860 (K,B). *Cumberland Gulf*, Pangnirtung, Soper 1924 (O), Malte 1927 (O,G,C), Polunin 1934 and 6, Turner 1935 (K); "Kicker-tine (Kekerten) Island" (Taylor 1863, p. 327).
5. S. BAFFIN: c. "Signuia near Cape Haven" (Schuchert and White ex Holm 1900, p. 65); Loks Land, Palmer 1929 (P). *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 33 (O,G,C pars) 126851, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. Neerlo Nakto, Parry 1822 (B,C)¹; Gore Bay, Freuchen 1922 (O,C); ? "Repulse Bay" (Rae 1850, p. 213).
7. N. LABRADOR: c. Burwell, Hantzsch 1906 (D*), Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Wakeham Bay, Johansen 1927 (C), Polunin 1936; Sugluk, Malte 1933 (O,G,N), Polunin 1936; Wolstenholme, Malte 1928 (O,G), Polunin 1934 and 6; "Hyla" (Bell ex Macoun 1886, p. 498); Cape Smith, Malte 1928 (O,G,C).
9. ISLANDS IN HUDSON, ETC., BAYS: f. *Southampton Island*, anon. 1821 (specimen in Herb. Edinburgh); York Bay, Olsen 1922 (C); South Bay, Polunin 1934; Noksaruak, Baird 1936; Walrus Island, Baird 1936.
10. W. COAST HUDSON BAY: f? Chesterfield, Malte 1928 (O,G,C), Polunin 1936.

139. *Arenaria peploides* L., Sp. Pl. ed. 1, p. 423 (1753).

Adenarium peploides (L.) Raf.

Alsine peploides (L.) Crantz

Ammadenia (*Ammodenia*) *peploides* (L.) Rupr.

Halianthus peploides (L.) Fries

Honkenya (*Honkeneja*) *peploides* (L.) Ehrh.

Merckia peploides (L.) D. Don

All the above generic names have received some recognition, and most have been used in arctic literature. The American variations of this well-

¹ There is also a specimen in Herb. Edinburgh.

known species have been delimited by Fernald (1909b, pp. 109 *et seq.*). From his discussion it would appear that very little of the material from within our area belongs strictly to the European plant described by Linnaeus, although my No. 1391 from Wakeham Bay, and also occasional specimens from the shores of Hudson Bay, have the "Flowers few to many in terminal leafy cymes" and the leaves less than 2 cm. long, and so seem referable to the typical form. The vast majority of our plants have the "Flowers few, terminal or axillary but not in distinct cymes" and, with the leaves also small and more or less ovate, have to be referred to

var. *diffusa* Hornem., Oec. Pl. ed. 3, p. 501 (1821).
(*Arenaria diffusa* Wormskj.)

This is indeed the usual plant of Greenland and eastern America north of the Strait of Belle Isle, and, according to Hultén (1928, p. 84), of the arctic regions in general. However, it should be mentioned that most of the material from within our area is still somewhat suggestive of the head form in having the majority of the flowers aggregated towards the apex of the axis, even if there are also some solitary ones on long pedicels coming from the axils of lower leaves. Hence it is only after some hesitation that I have maintained var. *diffusa* as separable in our area.¹ Moreover, in the northernmost localities the plants are often tufted in the manner described by Simmons (1909, p. 77) from nearby West Greenland. This would indeed seem to represent a separable form, but as *Arenaria peploides* is already a *typus polymorphus* we will not complicate matters with further names of doubtful worth.

General Distribution. The whole species circumpolar, with a great range in latitude, including some high-arctic lands. Northernmost records around 78° 20' N.—at Reindeer Point in West Greenland (Simmons 1909, p. 77) and in Isfjord, Spitsbergen (Resvoll-Holmsen 1927, p. 37).

E. Arctic Distribution. Probably almost complete around coasts over the southern two-thirds of our latitude range, but less common in northern Baffin and not recorded north of Lancaster Sound. Probably overlooked in Melville Peninsula.

Occurrence. Plentiful around shores south of the Arctic Circle, more occasional northwards. Grows generally in tangled mats 5-10 cm. high and spreading actively by means of stolons and subterranean runners in the manner described and figured by Warming (1877, pp. 96 *et seq.*) and Holm (1922, p. 25B). Chiefly a little above high-water mark on sandy shores, which it binds actively, but also occurring on more finely comminuted material and on patches of sand or mud among rocks, though never away from the influence of salt water. In many places it forms aggressive patches a yard or more in diameter, and generally flowers and ripens fruit abundantly.

3. N. BAFFIN: o. Pond Inlet, Mathiassen 1923 (C) 769, and six others (O,M,C) all intermed. or var. *diffusa*; Arctic Bay, Polunin 1936 var. *diffusa*; "Port Bowen" (Ross ex Hooker 1826, p. 123).

¹ Intermediate or otherwise doubtful specimens are generally left without varietal qualification in the citations of individual collections given below.

4. C. BAFFIN: f. Cape Searle, Taylor 1860 (K,B). *Cumberland Gulf*, Pangnirtung, Soper 1923 and 4 (O,C), Malte 1927 (O,G,C) 118733 118735, Polunin 1934 and 6 var. *diffusa*, Turner 1935 (K) var. *diffusa*; "Kingnait and Kicker-tine (Kekerten) Island" (Taylor 1863, p. 326 as "Honk. pep.").
5. S. BAFFIN: f. "Signuia near Cape Haven" (Schuchert and White ex Holm 1900, p. 65). *Frobisher Bay*, Point Brewster, Potter 1937 var. *diffusa*; York Harbour, Potter 1937 var. *diffusa*; Cape Dorset, Polunin 1934 var. *diffusa*.
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 4832 var. *diffusa*; Burwell, Johansen 1927 (C) 1228.
8. N. QUEBEC: c. Cape Wales, Bell 1884 (C); Stupart Bay, Payne 1886 (T) 20 21; Wakeham Bay, Malte 1927 and 8 (O,G,C) 118734 120276 var. *diffusa*, Johansen 1927 (C) 1168, Polunin 1936 incl. typical form; Sugluk, Malte 1933 (O,G), Polunin 1936; Wolstenholme, Johansen 1927 (C) 1021, Malte 1928 (O,G,C) 120964, Polunin 1934 and 6 var. *diffusa*; Cape Smith, Malte 1928 (O,G) 120878.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B) var. *diffusa*; Salisbury Island, Buchan 1938 var. *diffusa*; Nottingham Island, Bell 1884 (O) 34384 var. *diffusa*, Johansen 1927 (O) 1070 1099. *Southampton Island*, South Bay, Sutton 1930 (G), Manning 1934 var. *diffusa*; Polunin 1934 var. *diffusa*; Walrus Island, Baird 1936 var. *diffusa*.
10. W. COAST HUDSON BAY: f? Chesterfield, Malte 1928 (O,G,C) 120540, Gardner 1933 (G), Polunin 1936 var. *diffusa*; south of Eskimo Point, Birket-Smith 1923 (C) 1045.

140. *Arenaria humifusa* Wahlenb., Fl. Lapp., p. 129 (1812).

A. ciliata L. var. *humifusa* (Wahlenb.) Hartm.

A. cylindrocarpa Fernald

A. norvegica Autt. de Fl. Groenl., non Gunn.

The resurrection of this interesting "lost species" of Wahlenberg has recently been accomplished by Prof. Rolf Nordhagen (1935, cf. especially pp. 24-5), who has examined "a very great material" of it. Actually, it has already been reported from within our area—by Simmons (1906, p. 115, sub nom. *Arenaria ciliata* f. *humifusa*) from the south coast of Ellesmere—but now must be recorded as widespread in the Eastern Arctic south of this point. My material seemed to vary in the field—particularly in the habit, which may be anything from loose and creeping to rather loosely tufted, and in the length of the pedicel and size of the flower. Thus, in most southern specimens the pedicels are elongated sufficiently to carry the capsules well clear of the close tuft of leaves that in the Far North (and indeed in Wahlenberg's type, cf. Nordhagen 1935, Pl. 2) almost envelops the bud and sometimes even the capsule. However, in the herbarium these differences do not seem sufficiently marked to warrant segregation of any varieties.

General Distribution. From northeastern Europe and West Greenland¹ across eastern North America to the Rocky Mountains. Chiefly alpine and arctic. Northernmost record Murchison Sound between Neke and Igdlolnarsuit, 77° 53' N. in East Greenland (Nygaard ex Nordhagen 1935, p. 27).²

¹ Including the Julianehaab district in the south (Polunin 1937, field notes), which is a great range extension.

² Nordhagen on this same page states that Simmons' specimens came from "Ellesmere orientalis, Fram Harbour in scopulosis intra Seagull Rock et stat. navis. 1899", which would make it the northernmost record. This appears to be due to a mistake on the label, duplicated also on the sheets in the Kew and Copenhagen Herbaria, for Simmons expressly states (1906, p. 116) that his only material came from "a limited area between Spade Point and Seagull Rock in the Harbour Fjord" on the south coast, as Nordhagen has indeed indicated correctly on his distribution map (1935, p. 28).

E. Arctic Distribution. Probably much overlooked, but now known to be very widespread at least in the eastern half, occurring on both sides of Hudson Strait (in northernmost Quebec and southern Baffin) and again in northern Baffin and on the south coast of Ellesmere.

Occurrence. Perhaps not infrequent, but so very small and insignificant that it is most often entirely overlooked, being largely embedded in the surface soil and cryptogamic vegetation and rarely rising more than 1-2 cm. above the general level of the ground. Nevertheless, an attractive plant. Grows chiefly among cryptogams on rather dry, sandy or gravelly areas, including seashores above the direct influence of salt water, but also occurs in open spots in heaths and around habitations. Like some other "relict" species it appears to be somewhat calciphilous. Flowers and fruits profusely, the capsules being often so abundant as almost to hide the other parts.

1. ELLESMERE: r. *South Coast*, Harbour Fiord, Simmons 1899 (K,C*) 2575 as "*Arenaria ciliata*."
3. N. BAFFIN: r. *Arctic Bay*, Polunin 1936.
5. S. BAFFIN: f. *Lake Harbour*, Malte 1928 (O,G) 121009 as "*Minuartia biflora*," Polunin 1936; Cape Dorset, Polunin 1934 and 6.
8. N. QUEBEC: r. *Cape Smith*, Polunin 1936.

141. *Arenaria rubella* (Wahlenb.) Sm., Engl. Bot., Suppl. I, tab. 2638 (1831).

- A. hirta* Wormskj.
- A. propinqua* Richardson
- A. verna* L. var. *pubescens* (Cham. and Schl.) Fernald
- A. quadrivalvis* R. Br.
- Alsine rubella* Wahlenb.
- Alsine verna* (L.) Wahlenb. var. *rubella* (Wahlenb.) Lange
- Minuartia rubella* (Wahlenb.) Graebn.
- Alsinopsis* Rydberg

I have given only sufficient of the synonymy to guide the reader in arctic literature. In maintaining it distinct from *typhus polymorphus* *Arenaria verna* L., with "Varietatum limitibus difficillime coërcenda, synonymia taediosa ac inextricabili fere modo confusa, botanicorum omnis aevi cruciamentum" (Fenzl 1842, p. 348), I am following the policy of Prof. Fernald in his new revision of Gray's Manual. At all events this arctic material that I am calling *Arenaria rubella*, although it varies in vegetative appearance and some other minor characters, forms a rather good whole, with its characteristic three-nerved and strict leaves and calyx-lobes, and its shortish glandular pubescence, which merely varies somewhat in abundance. Also the calyx-lobes may vary from 2.5-4.5 mm. in length, and the tiny caespites of the Far North, with often solitary flowers rising barely a centimetre above the surface of the soil, may give way in

the south to loose tufts with branched axes as much as 10 cm. high; but I have been able to recognize only one really separable entity in our area, viz.,

f. *epilis* (Fernald) Polunin in *Rhodora* XLI, p. 39 (1939).

General Distribution. Circumpolar; all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 234).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Fairly common almost everywhere, but insignificant and often overlooked. Forms cushions up to 10 cm. in diameter in the south, and generally much smaller in the north. Chiefly characteristic of open clay and gravel plains and other bare spots, but also occurring in more luxuriant heathy areas, and indeed almost everywhere except the dampest marshes. It has a long, leathery taproot anchoring it firmly to the ground, and often standing it in good stead in areas of surface erosion where other plants lose their hold. Also it flowers abundantly and quickly and matures fruit in a very short time, and, being able to withstand almost all degrees of exposure, is unusually well adapted to arctic conditions.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. *Grinnell Land*, Greely (G) 11 as "*Arenaria verna* var. *hirta*"; Fram Harbour, Simmons 1899 (K,C) 1089 as "*Alsine verna* var. *hirta*".
2. DEVON, ETC., ISLANDS: c. "North Kent" (Simmons 1909b, pp. 19 and 20, sub nom. *Alsine verna*). *Devon Island*, "Mount Belcher, Cape Vera, and West Fiord" (Simmons 1909b, pp. 7 et seq.); "Boat Cape" (Schei ex Simmons 1909b, p. 6, sub nom. *Alsine verna*); Dundas Harbour, Malte 1927 (O,C) 118722 118723 118729, Polunin 1934 and 6; Beechy Island and neighbourhood, Lyall 1854 (K). *Cornwallis Island*, Assistance Bay, Sutherland 1851 (K). *Somerset Island*, Parry 1825 (specimens in B and Herb. Edinburgh); "Port Leopold" (McClintock ex Markham 1909, p. 245); "?Fury Beach" (Parry ex Hooker 1826, p. 123); "Port Kennedy" (Walker ex Hooker 1861, p. 82).
3. N. BAFFIN: c. *Bylot Island*, Korokdjuak, Mathiassen 1923 (C) 824; Pond Inlet, Malte 1927 (O,G,C) 118727 118728, Polunin 1934 and 6, Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O) 118724 118732, Polunin 1936; Port Bowen, Parry 1825 (G,K)¹; near Cape Hallowell, Freuchen 1922 (C) 48.
4. C. BAFFIN: f. Cape Searle, Taylor 1860 (K,B pars) incl. as "*Arenaria Rossii*". *Cumberland Gulf*, Pangnirtung, Soper 1923 (O,C p. *maj.*) as "*Alsine stricta*", Polunin 1934; "Winter Harbour and Kingnite" (Taylor 1863, p. 326, sub nom. *Arenaria verna* var. *rubella*).²
5. S. BAFFIN: c. *Frobisher Bay*, Loks Land, Palmer 1929 (P) as "*A. verna*"; Point Brewster, Potter 1937 pars. *Resolution Island*, Acadia Harbour, Potter 1937 No. 8238 f. *epilis*. *South Coast*, Lake Harbour, Malte 1928 and 33 (O,G,N,C) 121021 126850 126897, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. South shore Fury and Hecla Strait, Parry 1822 (specimen in Herb. Edinburgh); Neerlo Nakto, Parry (B,C)¹; Igloolik, Hooper 1822 (L), Parry (B,C).
7. N. LABRADOR: f. Burwell, Hantzsch 1906 (D*), Macoun 1910 (O,G,N,C) 79088, Malte 1928 (O) 120271, Polunin 1931, 4, and 6.
8. N. QUEBEC: o. Wakeham Bay, Malte 1933 (O,G) 126940, Polunin 1936; Sugluk, Polunin 1936.

¹ There is also a specimen in Herb. Edinburgh.

² A specimen that I recently found in Herb. Edinburgh finally confirms the report from Kingnait.

9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B, *pars*).
Southampton Island, York Bay, Parry 1821 (K*); South Bay, Malte 1928
 (O,G,C) 120634, Sutton 1930 (G), Polunin 1934.
10. W. COAST HUDSON BAY: r? Cape Eskimo, Macoun 1910 (O) 79089 as "*Alsine biflora*".

142. ***Arenaria Rossii*** R. Br. apud Richardson in Franklin, Narr. 1st Jour.,
 App., p. 738 (1823).
Alsine Rossii (R. Br.) Fenzl
Minuartia Rossii (R. Br.) Graebn.
Alsinopsis Rossii (Richardson) Rydberg

This was published by Sir John Richardson and Robert Brown at almost the same time, each attributing the species to the other. As Richardson's paper appeared first, and he definitely cited Brown as the author (*ined.*), it seems best to attach Brown's name to the species even if he later ascribed it to Richardson.

Few of the herbarium specimens that I have seen labelled *Arenaria Rossii* belong to this species, which is, however, perfectly distinct. But although all the material from the northern parts of our area seems to be quite typical, having the calyx at least not shorter than the oblong petals (cf. Fernald 1906, p. 33, and Simmons 1906, Pl. 6), most of the specimens from Southampton Island, where the species abounds, differ in having the petals ovate and distinctly exceeding the sepals—often by as much as one-half of their length. This I propose as

var. ***Daethiana*** n. var.

A typo differt petalis ovatis, longioribusque quam sepalis. Named in fond memory of Christopher d'Aeth of Balliol College, Oxford. Type in Gray Herbarium of Harvard University: *G. M. Sutton*, South Bay, Southampton Island, July 20, 1930, sub nom. *Arenaria uliginosa*. Figure on Plate V.

General Distribution. ? Probably circumpolar; chiefly high-arctic and alpine. Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 234).

E. Arctic Distribution. Fairly general in the north, at least on calcareous areas, and widespread southwards to Melville Peninsula and Akpatok and Southampton Islands, but apparently absent from many intervening areas.¹

Occurrence. Fairly plentiful on Ellesmere, Devon, and Southampton Islands; local in between. Grows chiefly on open and damp, clay or gravel plains, but also in late-snow depressions. Forms compact, usually semiorbicular tufts up to 10 cm. in diameter in the north, but looser and more rampant small "mats" in the south. The tiny, succulent leaves when young are green, when old are purple, and when dead are light

¹ Taylor's report (1863, p. 326) from central Baffin is founded on other species, as I have seen from his specimens in the London herbaria (cf. also Simmons 1904, p. 470, and 1913, p. 82).

brown, the effect being to give the whole perennial tussock a strange reddish green hue. Flowers very late and sparingly in the Far North, but plentifully farther south. Apparently calciphilous, and reproducing largely by vegetative means (cf. Sørensen 1933, p. 33).

1. ELLESMERE: f. *Grinnell Land*, Greely (G) 50 as "*Arenaria groenlandica*", etc.; Discovery Harbour, Hart (K,B) as "*Arenaria groenlandica*". *South Coast*, Craig Harbour, Polunin 1934; Harbour Fiord, Simmons 1900 (G,K,B,C) 2390; "Goose Fiord" (Simmons 1906, p. 117). "*West Coast*, Reindeer Cove and Lands End" (Simmons 1906, p. 117).
2. DEVON, ETC., ISLANDS: f. *Devon Island*, "Mount Belcher and West Fiord" (Simmons 1909b, pp. 7 and 9); Dundas Harbour, Polunin 1936; Beechy Island and neighbourhood, Lyall 1854 (K); between Beechy Island and Northumberland Sound, Lyall 1852 (K); 'east side Wellington Channel', Lyall 1852 (K). *Cornwallis Island*, Assistance Bay, Sutherland 1851 (K); "Opposite Browne Island" (McClintock ex Markham 1909, p. 245).
3. N. BAFFIN: l. Arctic Bay, Polunin 1936; Port Bowen, Parry (B), (Ross ex Hooker 1826, p. 123).
6. MELVILLE PENINSULA: o. Neerloo Nakto, Parry (C*); Igloolik, Parry (B); Barrow River, Parry (B)¹; Winter Island, anon. (specimen in Herb. Edinburgh).
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B, *pars*) 1428 as "*Alsine rubella*". *Southampton Island*, York Bay, Parry 1821 (K,C); South Bay, Sutton 1930 (G) var. *Daethiana* (orig. as "*Arenaria uliginosa*"), Polunin 1936 incl. 2280 2282 2283 var. *Daethiana*; Noksaruak, Baird 1936.

143. *Arenaria uliginosa* Schleich. apud Lam. and DC., Fl. Franç. IV, p. 786 (1805).

Spergula stricta Swartz (1799), not *Arenaria stricta* Michx. (1803)

Minuartia stricta (Sw.) Hiern.

Alsine stricta (Sw.) Wahlenb.

Alsinella stricta (Sw.) Summ.

Alsine uliginosa Syme, not Vill.

Alsinanthe stricta (Sw.) Reichenb.

According to recent determinations of specimens from the temperate regions of North America, and contrary to the indications in Volume I of Index Kewensis, the *Arenaria stricta* that Michaux (1803, I, p. 274) described as having "Hab. in rupibus Novae Anglicae, Canadae" is entirely different from our arctic one, for which *A. uliginosa* becomes the first valid name.

This species seems previously to have been collected only a very few times in the New World, but in 1936 I found it on almost innumerable occasions in no less than seven widely separated localities northwards to northern Baffin. It has only recently been recorded as "new" not only to the Arctic Archipelago but also to our entire area, as the specimen reported by Raup (1936, p. 23) from Southampton Island in reality belongs to *A. Rossii*—cf. Polunin 1938b, p. 99.

Arenaria uliginosa in our area grows typically in rather loose, soft tussocks, from which the long, glabrous and more or less erect pedicels rise to a total height of 5-10 cm. The tussocks are generally almost as broad as the axes are high, and have a single thick taproot. The species flowers and fruits abundantly, and when once seen in the field can hardly

¹ There is also a specimen in Herb. Edinburgh.

be confounded with any other plant. My specimens, like those that I have seen from northern Scandinavia, vary somewhat in the length and shape of the calyx-lobes, but altogether seem to comprise a rather good series as far as general form is concerned. There is, however, a well-marked colour phase that must be mentioned. All the material that I have seen from Europe and most from within our area has the axes a rather dark purplish brown at maturity, whereas some of my specimens have them light yellow instead:

f. *albina* n. forma

A forma typica differt caulibus flavis, candidioribus foliis et sepalis. This and the typical form sometimes grow together, but I have not seen any intermediates among mature specimens. Type in British Museum: *Nicholas Polunin*, Arctic Bay, Baffin Island, No. 2571, September 9, 1936.

General Distribution. Europe, Greenland, and eastern North America; possibly more widespread. Chiefly arctic and alpine. Northernmost record, inner west side of Sorgfjord, c. 79° 53' N. in Spitsbergen (Scholander 1934, p. 47).

E. Arctic Distribution. Fairly general from northernmost Quebec to the southern parts of the Arctic Archipelago. Also in northern Baffin.

Occurrence. Occasional to frequent in damp, low-lying areas, being most characteristic of open, mossy or humous spots in marshes. Never seen on areas that are at all dry in *early* summer; hence well named.

3. N. BAFFIN: o. Pond Inlet, Polunin 1936; Arctic Bay, Polunin 1936 incl. 2571 f. *albina*.

5. S. BAFFIN: f. Lake Harbour, Polunin 1934 and 6 incl. 1230 2342 2325? f. *albina*; Cape Dorset, Polunin 1934 and 6.

8. N. QUEBEC: o. Wakeham Bay, Malte 1928 and 33 (O,G,C) incl. 120202 as "*Minuartia stricta*", Polunin 1936; Sugluk, Polunin 1936.

9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B, *pars*) 689 811 as "*Alsine rubella*". *Southampton Island*, South Bay, Polunin 1936.

144. *Arenaria sajanensis* Willd. apud Schlecht. in Berl. Gesell. Nat. Fr. Mag. VII, p. 200 (1816).

Alsine biflora Wahlenb., not *Arenaria biflora* L.

Minuartia biflora (L.) Schinz and Thell.

Alsinella biflora (L.) Sw.

Alsinopsis sajanensis (Willd.) Cockerell

All my material of this group from within our area (about 50 numbers) belongs to *A. sajanensis* s.str. (cf. Fernald 1919, pp. 12 *et seq.*) and varies in little except size and general appearance. Thus the plant, attached at the centre by a long and persistent taproot, may spread laterally to form a loose mat several decimetres in diameter and sporting axes up to 10 cm. high, or it may remain as a tiny tuft only 1-2 cm. in diameter and scarcely as high as that. The most condensed pulvini may bear some superficial resemblance to *Arenaria rubella*, but can be immediately identified as *A. sajanensis* by the blunt ends to the oblong sepals.

General Distribution. ? Probably circumpolar or at least circumboreal, but not yet authentically recorded between the central parts of our area and the Canadian Rocky Mountains. Chiefly alpine and arctic. Northernmost record Hecla Hamna, c. 79° 55' N. in Sorgfjord (Treurenberg Bay), Spitsbergen (Scholander 1934, p. 45).

E. Arctic Distribution. General in the mainland regions of Quebec and northern Labrador in the eastern half of the extreme south, and extending northwards through the southernmost parts of the Arctic Archipelago to central Baffin and Melville Peninsula.

Occurrence. Fairly common on the mainland; only occasional or local farther north. Especially characteristic of, and except in the extreme south largely confined to, areas covered by snowdrifts that melt fairly (but not very) late in summer and leave a plentiful and lasting supply of water. Flowers and fruits abundantly, but, like most other "late-snow" plants, has been extensively overlooked.

4. C. BAFFIN: o. "Scotts Bay, etc." (Taylor 1863, p. 326, sub nom. *A. arctica*); Clyde, Dutilly 1936; Cape Searle, Taylor 1858 and 60 (K, pars) as "*A. arctica*" and "*A. Rossii*". *Cumberland Gulf*, Taylor 1860 (K,B) as "*A. arctica*"; Kingnait, Taylor 1861 (specimen in Herb. Edinburgh) as "*A. arctica*".
5. S. BAFFIN: f. Loks Land, Palmer 1929 (P) 642433 642434 as "*A. sedoides*". *Frobisher Bay*, Point Brewster, Potter 1937; *York Harbour*, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6.
6. MELVILLE PENINSULA: r. Island in Fury and Hecla Strait, Ross (B) type of "*Arenaria Pumilio* R.Br." (*Sagina Pumilio* (R.Br.) Simmons test. Simmons).
7. N. LABRADOR: c. Cape Chidley, Bell 1884 (O, pars) 4878 as "*Arenaria verna*"; Burwell, Malte 1928 (O,G,C) 120082, Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G) 2692 as "*Arenaria verna* var. *pubescens*".
8. N. QUEBEC: c. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: l. Akpatok Island, Polunin 1931 (B, pars) 11 Nos. all as "*Alsine rubella*"; Nottingham Island, Bell 1884 (O,G) 4877 as "*Arenaria verna* var. *rubella*".

145. *Sagina nodosa* (L.) Fenzl, Verbreit. d. Alsin., tab. synopt. ad p. 18 (1833).

Spergula nodosa L.

In spite of its name of "Arctic Pearlwort", this charming little plant was not previously known in Atlantic North America north of the Strait of Belle Isle, although reaching far north of this in the West and also in Greenland. So it was one of my most delightful surprises of the summer of 1936 to discover it at Lake Harbour in southern Baffin—new to our area and to the entire Arctic Archipelago. Only one patch of it was found, but there it was plentiful enough, mixed with such other diminutive species as *A. humifusa*, and growing in small tufts 2-5 cm. high. It appeared not to flower at all, but buds were being formed for vegetative reproduction in the axils of almost all the cauline leaves. My material was all glabrous and hence, at least on this character, referable to the head form. In Greenland the plant flowers abundantly, but in Iceland and on the mainland on

both sides of the Atlantic I have seen specimens with a greater or lesser number of bulbils and few or no flowers. Evidently the presence or absence of flowers is a fickle character, but it seems necessary to separate our Baffin plants as

f. **bulbillosa** n. forma.¹

Planta tota sine floribus; bulbillis in axillis foliorum caulinarum. Type in Herb. Ottawa, cotypes in Gray, British Museum, and Oxford University Herbaria: *Nicholas Polunin*, Lake Harbour, Baffin Island, No. 2315, August 27, 1936. Figure on Plate V.

General Distribution. ? European, transgressing into western Asia and eastern and central North America. Chiefly in north temperate regions. Northernmost station on Måsøya, 71° 3' N. off the north coast of Scandinavia (Dahl 1934, p. 313).

E. Arctic Distribution. Known only from Lake Harbour on the south coast of Baffin.

Occurrence. Very rare, but markedly gregarious (*See above*). Only found once, growing on fine, caked silt around the margin of a dried-up freshwater pool.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.

146. **Sagina saginoides** (L.) Dalla Torre, Anleit. Beob. Alpenpfl., p. 75 (1882).²

S. Linnaei Presl

Spergula saginoides L.

In view of the now well-known and widespread occurrence of *Sagina saginoides* in North America, and of its appearance within our area not far to the south (*See below*), Hooker's enumeration (1825, p. 389) of this species from Melville Peninsula, among the plants brought home from Parry's Second Voyage, may be taken as probably correct despite the grave doubts expressed by Simmons (1913, p. 80, sub nom. *Sagina Linnaei*). In any case it is here recorded for the first time from the Arctic Archipelago proper, having turned up (*fide* Mr. A. J. Wilmott) among my collections from Akpatok Island, which were determined in my absence and which include no less than six species of *Sagina* and *Arenaria* under the single name of "*Alsine rubella*."

In our area *Sagina saginoides* forms tufts 1-4 cm. in diameter, the axes being also 1-4 cm. high. From the limited material at my disposal I have been unable to pick out any marked forms.

General Distribution. Circumboreal, chiefly subarctic and alpine. "Nordgrense på Magerøya, 71° 8-9' " N. off the north coast of Scandinavia (Dahl 1934, p. 312).

¹ I have been unable to determine quite what relationship this bears to the similarly viviparous var. *moniliformis* G. F. W. Meyer, which is said to be generally "prostrate", forming "more or less circular patches 8 inches across", and which "does not flower so freely as the more normal types" (*See Jour. Bot.* 1935, suppl. p. 4).

² I have not been able to check this citation.

E. Arctic Distribution. Widespread in the extreme south, from northernmost Labrador and Akpatok Island to Fullerton on the west coast of Hudson Bay; probably also northwards to Melville Peninsula.

Occurrence. Uncommon and with few known localities, but so insignificant that it may have been extensively overlooked. My Burwell collections were growing on the damp mossy bed of a narrow, rocky ravine that would presumably be filled with snow every winter and left bare only rather well on in the summer. Hence, probably a "late-snow" plant. Its small, soft tussocks become yellowish in late summer.

(MELVILLE PENINSULA: ? (Edwards ex Hooker 1825, p. 389).)

7. N. QUEBEC: r. Burwell, Polunin 1934 and 6.

9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B, *pars*) 758 as "*Alsine rubella*."

10. W. COAST HUDSON BAY: r. Fullerton, Macoun 1910 (O,G) 79091 *fide* Fernald (orig. as *Sagina nivalis*).

147. *Sagina caespitosa* (J. Vahl) Lange, Consp. Fl. Groenl. 1, p. 22 (1880).
S. nivalis of authors, not Fries

The type specimen of Robert Brown's *Arenaria Pumilio*, which was collected in our area and which I have seen in the British Museum, belongs to *A. sajanensis* (cf. p. 204). Jens Vahl's *Arenaria caespitosa*, published 15 years later, is, however, a species perfectly distinct from *A. sajanensis*, and also from *Sagina nivalis* Fries under which it is frequently placed as a synonym—probably because it has been so rarely collected that there is hardly any material available for reference in the herbaria.

In our area *Sagina caespitosa* seems to vary scarcely at all except in the size and compactness of its tussocks, and in being sometimes a little hairy around the top of the pedicel and base of the calyx.

General Distribution. ? Doubtful owing to confusion with other species. I have seen specimens from northwestern Europe, Greenland, eastern North America, and the Rocky Mountains of Colorado. Northernmost record 74° 15' N. in West Greenland (cf. Porsild 1920, p. 70).

E. Arctic Distribution. Widespread in Labrador, Quebec, and Baffin.

Occurrence. Rare to occasional. As far as I have been able to determine it is never at all common, although so insignificant that it must be very generally overlooked. Grows chiefly on open and damp, clayey or mossy spots, and best where these are sheltered among rocks and at least well covered with snow during the winter. Forms little round tussocks 1-6 cm. in diameter and flowers very abundantly.

(N. BAFFIN: ? "Port Bowen" (Parry ex Hooker 1826, p. 123)¹.)

4. C. BAFFIN: o. Cape Searle, Taylor 1860 (K,B) as "*Arenaria Rossii*"; "Exeter Sound" (Seidenfaden 1932, p. 13). *Cumberland Gulf*, Taylor 1860 (K) as "*Arenaria aretica*"; Pangnirtung, Polunin 1934; Kingnait, Taylor 1861 (specimen in Herb. Edinburgh) as "*Arenaria Rossii*".

¹ This report is probably founded on a specimen in the British Museum named *Arenaria Pumilio* and taken during Parry's Third Voyage, but without locality.

5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 incl. 8240 *pars* with *Arenaria rubella*. *South Coast*, Cape Dorset, Polunin 1934.
7. N. LABRADOR: f. Burwell, Malte 1928 (O,G,C), Polunin 1934 and 6; Bowdoin Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G, *p. maj.*) 2667 as "*Sagina nivalis*."
8. N. QUEBEC: o. Sugluk, Polunin 1936; Wolstenholme, Polunin 1934.

148. ***Sagina intermedia*** Fenzl in Ledebour, Fl. Ross. I, p. 339 (1842).
S. nivalis (Lindbl.) Fries

As already explained by Simmons (1906, p. 119), it seems necessary to use the Fenzl name for this species because of the confusion surrounding the earlier and more familiar one of Fries. This is yet another little plant that has been largely overlooked in our area; sometimes specimens will be seen in the mature fruiting stage less than 1 cm. high, with rosettes only 0.4 cm. broad. More normally it forms a single tiny tuft from which the axes rise to a total height of 2-5 cm. Nevertheless, it manages to vary markedly in such characters as the shape of the neatly paired cauline leaves, and the length and thickness of the pedicels; but is already so small that it seems best left intact.

This plant again appears rarely to have been collected in North America before. Thus Macoun omits it from his Catalogue, and, writing as late as 1913, Simmons had only his own collection from Ellesmere, and a doubtful one made nearly a century previously by Sir John Ross, from the whole Arctic Archipelago. Actually it abounds almost all over the archipelago, being so common in our area at least as far north as southern Ellesmere that I have myself collected or especially noted it over a hundred times during my three expeditions to these parts.

General Distribution. Circumpolar; all over the Arctic. Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 235).

E. Arctic Distribution. Probably almost complete on ice-free land, but not yet found on Melville Peninsula or northernmost Ellesmere.

Occurrence. Plentiful almost everywhere, but generally overlooked. Grows chiefly on plains of gravel or clay that are damp at least in early summer, and also on open, earthy spots in heaths and areas of *fjaeldmark*. Sometimes abundant on sandy seashores. Flowers profusely and fruits very quickly.

1. ELLESMERE: o. *East Coast*, Cocked Hat Island, Simmons 1899 (C). *South Coast*, Craig Harbour, Polunin 1934.
2. DEVON, ETC., ISLANDS: l? Dundas Harbour, Polunin 1934 and 6.
3. N. BAFFIN: o? Pond Inlet, Polunin 1936; Arctic Bay, Polunin 1936.
4. C. BAFFIN: f. Clyde, Polunin 1934 and 6; Cape Searle, Taylor 1860 (K, *pars*) as "*Arenaria Rossii*". *Cumberland Gulf*, Pangnirtung, Polunin 1934 and 6.
5. S. BAFFIN: o? Lake Harbour, Polunin 1936; Cape Dorset, Polunin 1936.
7. N. LABRADOR: f. Burwell, Malte 1928 (O,G,C), Polunin 1934 and 6; Grenfell Tickle, Potter and Brierly 1934 (G, *pars*) 2667.

8. N. QUEBEC: f. Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 8 Nos. as "*Alsine rubella*" and "*Alsine Rossii*". *Southampton Island*, South Bay, Polunin 1936.
10. W. COAST HUDSON BAY: f. Whale Point, Comer 1894 (G); Fullerton, Macoun 1910 (O) 79091; Chesterfield, Polunin 1936; ?Rankin Inlet, Macoun (O) 79090 as "*Sagina procumbens*".

RANUNCULACEAE

149. *Anemone parviflora* Michx., Fl. Bor.-Am. I, p. 319 (1803).

This species is so plentiful around Port Burwell on the south shore of Hudson Strait that I rather expected to find it in southern Baffin. However, in this I have not succeeded, and indeed like all other members of the genus it appears to be absent from all except the western parts of the Arctic Archipelago. Within our area it flowers abundantly, but appears to set ripe fruit only in exceptionally warm summers; the flowering specimens are generally about 10 cm. high and rarely become much taller afterwards, although only a little farther south specimens have been seen exceeding 30 cm. in height when in fruit. These, from Churchill on the west coast of Hudson Bay, belonged to the typical form, but all those from within our area are referable instead (cf. Holm 1922, p. 28B) to

var. *grandiflora* Ulbrich in Engler's Bot. Jahrb. XXXVII, p. 251 (1906).

General Distribution. North America, transgressing into eastern Asia. Chiefly alpine and subarctic. Northernmost record Collinson Point, 69° 59' N. on the north coast of Alaska (Johansen ex Macoun and Holm 1921, p. 12A).

E. Arctic Distribution. Apparently limited to the mainland regions of Quebec and northern Labrador in the eastern half of the extreme south.

Occurrence. At Burwell frequent to locally abundant on stream banks and damp, heathy or mossy slopes in sheltered situations having a good snow blanket in winter. Markedly gregarious, flowering abundantly (See above). All var. *grandiflora*:

7. N. LABRADOR: l. "Cape Chudleigh (Chidley)" (Bell ex Macoun 1886, p. 477); Burwell, (Bell ex Macoun 1886b, p. 25DD), Porsild 1930 (O), Polunin 1936.
8. N. QUEBEC: r. Hyla, Bell 1885 (O) 956.

150. *Anemone Richardsoni* Hook., Fl. Bor.-Am. I, p. 6 (1829).¹

This species, like the last, may yet be found in southern Baffin, especially as it reaches the Arctic Archipelago in the west. In our area it frequently grows mixed with *Ranunculus nivalis*, which it somewhat resembles in its upright form and golden-yellow flowers. However, the *Ranunculus* always comes out quickly, within a few days of being left bare by the melting snow, whereas *Anemone Richardsoni* is so much slower that the two will rarely be seen in flower together.

¹ For dates of publication of different parts of this work, See Jackson (1893, p. 298).

A single example of a strange monstrosity was collected in 1936 at Cape Smith, on the east coast of Hudson Bay (Polunin No. 1376), in which some of the outer perianth lobes were replaced by small but normally segmented green leaves, and the cauline rosette bore a second, quite sessile flower in its axil. Moreover, the margins of the segments of this cauline rosette were more or less petaloid near their point of attachment, being there thin and devoid of chlorophyll.

General Distribution. North America, transgressing into eastern Asia. More widely spread both east and west than the last species, occurring from West Greenland to the mouth of Lena River. Chiefly subarctic; northernmost record Minto Inlet, 71° 25' N. on Victoria Island, or possibly somewhat farther north in Prince of Wales Strait (cf. Simmons 1913, p. 85).

E. Arctic Distribution. Apparently limited to the mainland of Quebec in the extreme south, where it is fairly general.¹

Occurrence. Rather uncommon, growing chiefly on damp and sheltered slopes of humous soil among other relatively hydrophytic herbs. Markedly gregarious, flowering abundantly, and like *Ranunculus nivalis* especially characteristic of inundated areas below late-melting snow patches. Generally less than 10 cm. high when in flower, but shoots up afterwards.

8. N. QUEBEC: f. South shore of Hudson Strait, Low 1898 (O); Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,G), Polunin 1936; Sugluk, Polunin 1936; Cape Smith, Polunin 1936 incl. 1376 monstr.; Mosquito Bay, Low 1898 (O) as "*Anemone parviflora*".

151. ***Ranunculus trichophyllus*** Chaix apud Vill., Hist. Pl. Dauph. I, p. 335 (1786).

R. aquatilis of authors, not L.

Batrachium trichophyllum (Chaix) Van d. Bosch

Like most other aquatics, the batrachian Ranunculi have been so overlooked in the north that until a few years ago the section was known from our area only on the basis of a scrap collected in the extreme north of Labrador in 1884 by Robert Bell. Then in 1931 this species was found within the Arctic Archipelago (Polunin 1934, p. 204, sub nom. *Ranunculus aquatilis*), and now I can state that it is plentiful wherever suitable habitats occur all over the southern parts of our area, including Baffin, on which great island it extends northwards to Arctic Bay in Admiralty Inlet. All my material has the stems more or less filiform and rooting at the nodes, and so should be referred to the usual, wide-ranging, northern

var. ***eradicatus*** (Laestad.) Drew in Rhodora XXXVIII, p. 33 (1936).

(*Batrachium confervoides* Fries)

This in our area varies greatly in size. Thus in the extreme south the axes may be long and rampant and the leaves may exceed 10 cm. in

¹ A specimen in the Kew Herbarium labelled simply "Sir J. Ross Recd. 1865" may perhaps also come from within our area.

length, whereas in the north the whole plant is condensed, the axes rarely exceeding 10 cm. or the leaves 1.5 cm. in length. Some of the material from only a little to the south of our area approaches the typical form quite closely.

General Distribution. The whole species cosmopolite; the variety chiefly arctic and alpine. Northernmost record North Star Bay, 76° 30' N. in West Greenland (W. Elmer Ekblaw, Crockerland Expedition, 1914—specimen in Gray Herbarium).

E. Arctic Distribution. Probably general south of the 65th parallel, including the southernmost parts of the Arctic Archipelago. Also found in northern Baffin.

Occurrence. Fairly frequent in freshwater lakes in the south, growing chiefly where the water is 25-150 cm. deep and the bottom is of gravel or silt or other suitable rooting medium. Flowers and fruits plentifully; conspicuous in the water owing to the glistening white axes, which are often prostrate in the north, so that flowers and fruits are produced well beneath the surface. All var. *eradicatus*:

3. N. BAFFIN: r. Arctic Bay, Polunin 1936.
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Cape Dorset, Polunin 1934 and 6 *fide* Drew.
7. N. LABRADOR: f. Cape Chidley, Bell 1884 (G) *fide* Drew (orig. as "*Ranunculus aquatilis* var. *confervoides*"); Burwell, Johansen 1927 (C) 1232 as "*R. eradicatus*", Polunin 1936.
8. N. QUEBEC: o. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B) 182 851 952.
10. W. COAST HUDSON BAY: r? Chesterfield, Polunin 1936.

152. *Ranunculus Pallasii* Schlecht., *Animadv. Bot. Ranunc. Candollii* Sect. prior, p. 15 (1819).

One of the most notable "finds" during the 1936 expedition was this plant growing around the margin of a pool about 8 miles inland of Lake Harbour in southern Baffin—unrecorded from our area or any part of the Arctic Archipelago, although already it had been found some years before on the east coast of Hudson Bay.¹ (Indeed it was not previously supposed to be in America anywhere except in the extreme west of Alaska, but now it appears probable that it will one day prove to be circumpolar¹.) Subsequently, finding it growing in much greater abundance near Port Harrison in northern Quebec, a little to the south of our area, I had the idea that the American material was somehow different from the plant that I had known in Spitsbergen; but now in the herbarium I can see no differences at all. Indeed the species is one of the most peculiar and altogether characteristic, though rarely seen or collected. The one patch that was encountered

¹ There is also an old specimen in the Kew Herbarium collected by the Moravian Brethren at Okak on the Atlantic coast of Labrador, and another in Herb. Edinburgh from "Hudson's Bay lat. 57°-58°.... comm. Gillespie 1844".

in our area had the smooth fingered leaves growing about 15 cm. high, but showed no signs of flowering. However, the Port Harrison plants showed both the pinkish white petals and large, plump achenes in the same stand (August 6-8).

General Distribution. ? Probably circumpolar, but as yet little known in America (See above). Chiefly arctic, rarely found south of the 60th parallel. Northernmost record c. 78° 30' N. in Isfjord, Spitsbergen (cf. Resvoll-Holmsen 1927, p. 39).

E. Arctic Distribution. Known only from the vicinity of Lake Harbour in southern Baffin and from Mosquito Bay, 60° 50' N. on the mainland of Quebec.

Occurrence. Evidently very rare; my only collection was growing 10-20 cm. high on wet mud by the margin of a freshwater pool. Elsewhere forms characteristic beds in shallow water, with thick but soft rhizomes ramifying in the mud and leaves and axes rising straight out of the water, whose surface they exceed by about 5 cm.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.

8. N. QUEBEC: r. Mosquito Bay, Low 1898 (O,G,N) 23003.

153. *Ranunculus hyperboreus* Rottb. in Skr. Kjøbenhavnske. Selsk. Laerd. Vidensk. X, p. 458 (1770).

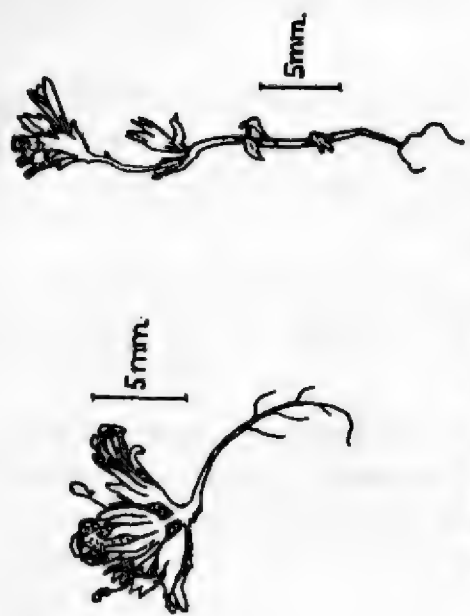
Most of my material of this species belongs to the general circumpolar head form, having the three lobes of each leaf rather broadly ovate, more or less entire, and rounded at the apex. However, in the south of our area there occur occasional specimens with the lobes narrower and their apices secondarily cut into two or three, as I have seen happen elsewhere, and at Chesterfield on the west coast of Hudson Bay there occurs a phase of this tendency that is so extreme that I thought at first it might be referable to *R. Yukonensis* Britton. However, it has all the other features of *R. hyperboreus*, and so I have little hesitation in describing it as

var. *Turquetilianus* n. var.

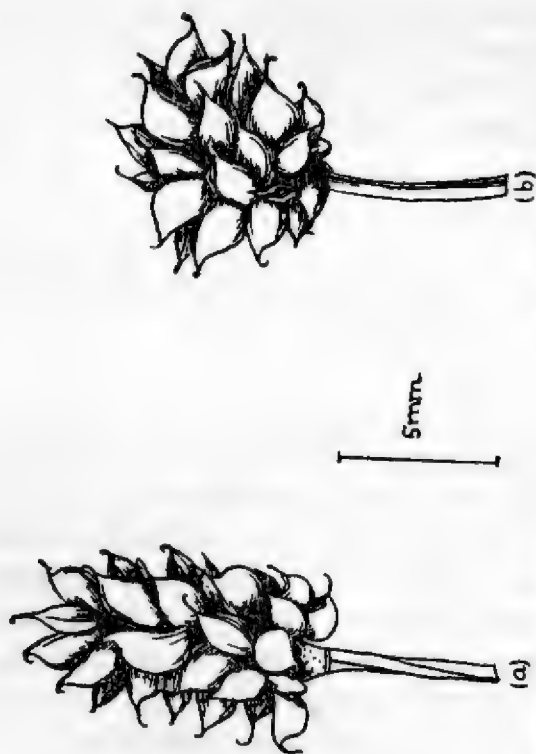
A forma typica differt segmentis ultimis foliorum oblongis acutiusculis, lobis principalibus separatis fere ad petiolum et fere omnibus segmentis secundariis. Type in British Museum: *Nicholas Polunin*, Chesterfield, Keewatin, No. 2217, August 20, 1936. Figure on Plate VI. In this variety at least some of the leaves of each plant are almost flabelliform, being reminiscent of those of *R. Purshii* Richardson, which occurs only farther south—for they have the primary lobes secondarily segmented more than half-way to the point of attachment of the petiole, and the ultimate segments generally nine and almost linear. My attention was first called to this well-marked variety at Chesterfield by Mgr. A. Turquetil, Roman Catholic Bishop of Hudson Bay, after whom it is a pleasure to name it.

R. hyperboreus also varies greatly with the habitat, having long, trailing internodes and petioles when growing in water—in which case the leaves generally expand and float on the surface, so constituting in the Far North

PLATE VI

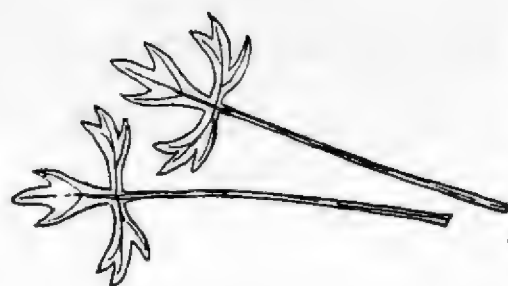


Euphrasia arctica var. *minutissima*

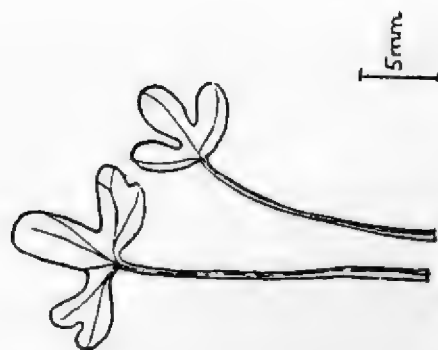


Ranunculus nivalis

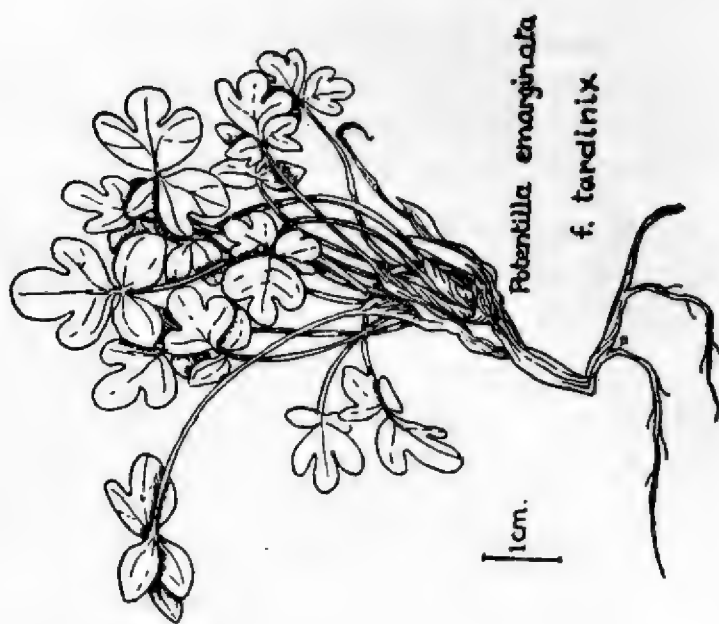
f. *subglobosus*



var. *Turquetilianus*



Ranunculus hyperboreus



Potentilla emarginata
f. *tardinix*

the only "floating leaf" type. On dry land the whole plant is much condensed, rarely rising more than a few centimetres above the surface of the ground, and having short internodes and much smaller leaves.

General Distribution. Circumpolar. Chiefly arctic. Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 238).

E. Arctic Distribution. Probably complete on ice-free land, but not yet recorded from the northern half of Ellesmere or from most of Melville Peninsula.

Occurrence. Common almost everywhere in shallow pools and damp aerial habitats, where it creeps in mossy vegetation or on wet mud, sometimes forming a dense soft sward, but rarely rising more than a few centimetres above the surface of the substratum. Abundantly flowering and fruiting except in its northernmost stations.

1. ELLESMERE: o. *Hayes Sound*, Simmons 1899 (N); *Skråling Island*, Simmons 1899 (G,K,C); "*Fram Harbour*" (Simmons 1906, p. 115). *South Coast*, *Fram Fiord*, Simmons 1899 (B); *Craig Harbour*, Polunin 1936; "*Harbour and Goose Fiords*" (Simmons 1906, p. 115).
2. DEVON, ETC., ISLANDS: o. *Devon Island*, *Dundas Harbour*, Polunin 1934 and 6. *Somerset Island*, *Port Leopold*, *Malte* 1927 (O,G,C); "?*Regents Inlet*" (Parry ex Hooker 1826, p. 121).
3. N. BAFFIN: o. *Pond Inlet*, *Bazin* 1935 (M); *Arctic Bay*, Polunin 1936; *Port Bowen*, *Parry* 1825 (K,B).
4. C. BAFFIN: f. "*Cape Adair and Cape Searle*" (Taylor 1863, p. 325); *Scotts Bay*, *Taylor* 1858 (K); *Clyde*, Polunin 1936. *Cumberland Gulf*, (Taylor 1863, p. 325); *Pangnirtung*, Polunin 1934 and 6; *Kekerten Island*, *Soper* 1924 (O).
5. S. BAFFIN: c. "*Signuia near Cape Haven*" (Schuchert and White ex Holm 1900, p. 66). *Frobisher Bay*, *Point Brewster*, *Potter* 1937. *Resolution Island*, *Acadia Harbour*, *Potter* 1937. *South Coast*, *Lake Harbour*, Polunin 1936; *Amadjuak Bay*, *Soper* 1926 (O); between *Amadjuak* and *Tchark-bach Fiords*, *Bell* 1897 (O); *Cairn Lake*, *Robinson* 1922 (G); *Cape Dorset*, Polunin 1934 and 6.
6. MELVILLE PENINSULA: r? "*Fury and Hecla Strait and Igloolik*" (Edwards ex Hooker 1825, p. 384).
7. N. LABRADOR: c. *Lacey Island*, *Potter and Brierly* 1934 (G); *Cape Chidley*, *Bell* 1884 (O*); *Burwell*, *Malte* 1927 (O,G,C), *Johansen* 1927 (C), Polunin 1931, 4, and 6; *Bowdoin Harbour*, *Potter* 1937.
8. N. QUEBEC: c. *Wakeham Bay*, Polunin 1936; *Sugluk*, Polunin 1936; *Wolstenholme*, Polunin 1936; *River Kovik*, *Low* 1898 (O); *Cape Smith*, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. *Akpatok Island*, Polunin 1931 (B). *Southampton Island*, *South Bay*, *Sutton* 1930 (G), Polunin 1934; *Coats Island*, *Porsild* 1930 (O*).
10. W. COAST HUDSON BAY: l. *Chesterfield*, *Freuchen* 1923 (O,C), *Malte* 1928 (O,G,C), *Sutton* 1930 (G, pars), *Gardner* 1933 (G, pars), Polunin 1936 incl. 2215 2217 2234 var. *Turquetilianus*.

154. *Ranunculus lapponicus* L., Sp. Pl. ed. 1, p. 553 (1753).

Writing as recently as 1913 (pp. 85-6) Simmons gravely doubted the occurrence of this species in the Eastern Arctic, although it had been reported several times. Now, however, I can state that it is widespread, at least in those parts of our area that lie south of the Arctic Circle, and that its range includes Baffin and hence the Arctic Archipelago. It does

not appear to vary at all significantly within our area, the single-flowered, scapose axes rising generally about 5 cm. above the surface of the mossy substrate. As already pointed out by Britton and Brown (1913, II, p. 106), the axis occasionally bears a single, deeply lobed foliage leaf.

General Distribution. ? Circumpolar; chiefly rather low-arctic and alpine. Northernmost station in Videfjord, around 79° 30' N. in Spitsbergen (Resvoll-Holmsen 1927, p. 40).

E. Arctic Distribution. Widespread in the extreme south and extending northwards at least to Cumberland Gulf in central Baffin.

Occurrence. Rather rare, but markedly gregarious. Grows exclusively in marshes and bogs, chiefly where the surface is of such coarse and "hard" mosses as *Polytrichum* spp. and *Orthothecium chryseum*. Beneath this surface the white rhizomes ramify, sending up an occasional leaf or scape. Appears always to flower and ripen fruit successfully; a weak but charming plant, growing almost buried in moss in sunny and sheltered situations and always a pleasure to find.

4. C. BAFFIN: l. *Cumberland Gulf*, Pangnirtung, Malte 1927 (O,G,C), Turner 1934 (K), Polunin 1934 and 6; "Kingua" (Boas ex Ambronn 1890, p. 97).
5. S. BAFFIN: r. Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Johansen 1927 (C), Polunin 1936.
(MELVILLE PENINSULA: ? "Interior" (Rae 1850, p. 212).)
8. N. QUEBEC: r. Sugluk, Polunin 1936; Wolstenholme, Polunin 1936.
10. W. COAST HUDSON BAY: o. Chesterfield, Polunin 1936; Cape Eskimo and near, Birket-Smith 1923 (C), (Güssow 1933, p. 118).

155. ***Ranunculus reptans* L.**, Sp. Pl. ed. 1, p. 549 (1753).

R. filiformis Michx.

R. Flammula L. var. *reptans* E. Meyer

Entirely new for our area and never before reported from nearly so far north in the eastern half of Canada. In 1936 it was also collected on both the east and west coasts of Hudson Bay a little to the south of our area (Polunin, field notes). In its one station within our area the leaves are always less than 1 mm. broad.

General Distribution: Circumboreal; wide-ranging latitudinally, but scarcely arctic. Northernmost record Goose Bay, c. 72° N. in Novaya Zemlya (Lynge 1923, p. 39).

E. Arctic Distribution. Known only from Chesterfield, on the west coast of Hudson Bay.

Occurrence. Common in its one locality, creeping on the soft, silty beds of shallow freshwater pools, often forming a closed green patch and flowering abundantly when the water dries up.

10. W. COAST HUDSON BAY: l. Chesterfield, Malte 1928 (O,G,C), Polunin 1936.

156. ***Ranunculus nivalis* L.**, Sp. Pl. ed. 1, p. 553 (1753).

Our commonest and most widespread member of the genus, the "snow buttercup" occurs almost everywhere that conditions satisfy its not very exacting requirements. When flowering it is generally around 8 cm. high, but afterwards it may shoot up to 20 or even 25 cm. Reports

that "this plant is remarkable for the variable form of its root-leaves" (Hooker 1840, I, p. 17) are doubtless due to confusion with other species, in particular the one considered next below, for in this respect *Ranunculus nivalis* seems to form a rather good if not altogether constant entity. Contrary to the implication of Britton and Brown (1913, II, p. 107) the flowers are white only when faded. The report of *Ranunculus glacialis* from within our area is certainly to be discarded (cf. Simmons 1913, p. 85). It was most probably founded upon an example of the present species or of *R. sulphureus* (q.v.).

With regard to the shape of the mature fruiting "head", this is generally described as cylindrical (oblong *sensu* Britton and Brown) and is so in the vast majority of specimens both within our area and in northern Europe. However, at Wakeham Bay and Wolstenholme, on the south shore of Hudson Strait, many of the plants have the "heads" subglobose, in some cases even broader than high. This phase at first seemed worthy of varietal rank, being fully developed only in the one localized area, but I have now seen tendencies to it in material from so many other places that it had better be styled

f. **subglobosus** n. forma.

A forma typica differt maturis frugiferentibus receptaculis non cylindricis sed subglobosis, et saltem tot latis quot longis. This form is immediately distinguished from *R. sulphureus* not only by the different leaves, but also by its naked receptacle. Type in British Museum: *Nicholas Polunin*, Wolstenholme, Hudson Strait, No. 233, August 27, 1934. Figure on Plate VI.

General Distribution. ? Probably circumpolar, but I have seen no undoubted specimens from the north Pacific region. Chiefly arctic and alpine, including all the far northern land-masses. Northernmost record doubtful owing to confusion with *R. sulphureus*: possibly Floeberg Beach, 82° 27' N. in Ellesmere (Feilden ex Simmons 1906, p. 110, but some at least of the specimens cited belong to *R. sulphureus*).

E. Arctic Distribution. Not yet found on the west coast of Hudson Bay, but otherwise probably complete on ice-free land.

Occurrence. Very common almost everywhere that the ground remains wet for at least 2 to 3 weeks after the snow has melted. Especially characteristic of temporarily inundated areas below melting banks of snow, but also occurs on well-drained mossy slopes and among rocks. Rarely abundant or of ecological importance except very locally. Flowers quickly a few days after the snow leaves it, and fruits early and abundantly except in the areas of latest lying snow where it may sometimes be found still in bud when winter comes again.

1. ELLESMERE: c. almost everywhere—numerous records (cf. Simmons 1906, p. 110) incl. Discovery Harbour, Hart (K); *Hayes Sound* (Hart 1880, p. 177), Bedford Pim Island, Simmons 1899 (G,B,C); *South Coast*, Fram Fiord, Simmons 1899 (C), Craig Harbour, Polunin 1936, Goose Fiord, Simmons 1901 (K,C).

2. DEVON, ETC., ISLANDS¹: c. "North Kent" (Simmons 1909b, p. 19). *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6; ? "Cuming Creek" (Borden ex Macoun in Low 1906, p. 320); between Beechy Island and Northumberland Sound, Lyall (K*). *Somerset Island*, Parry (B); ? "between Fury Beach and Elwyn Inlet" (Markham 1874, p. 295, sub nom. *Ranunculus glacialis*); Port Kennedy (Walker ex Hooker 1861, p. 82)¹.
3. N. BAFFIN: c. *Bylot Island*, Button Point, Mathiassen 1923 (C), Wilcox 1928 (O, pars) 125630; Pond Inlet and near, Lyall (K*), and nine others (O,M,G,C) incl. Soper 1923 (O,C) 111509 as "*Ranunculus affinis*"; Arctic Bay, Malte 1927 (O,G,C), Polunin 1936.
4. C. BAFFIN: c. Clyde, Polunin 1936. *Cumberland Gulf*, Taylor 1860 (K,B*)², Kumlien 1878 (G,N); Pangnirtung, Polunin 1934, Turner 1934 and 5 (K); Kekerten Island, Kumlien 1878 (G); Blacklead Island, Soper (O); "Kingua" (Boas ex Ambronn 1890, p. 97); Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: c. *Frobisher Bay*, Palmer 1929 (P); Point Brewster, Potter 1937; York Harbour, Potter 1937. *South Coast*, ? Upper Savage Island, Bell 1884 (O) 34224 doubtful scrap; Lake Harbour and near, Soper 1931 (O), Polunin 1936; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 420). *Gordon Bay*, Fox Island, Soper 1926 (O); Cape Dorset, Soper 1926 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. Igloodik, Parry (B); Five Hawser Bay, Parry 1821 (C)³.
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G); ? Cape Chidley, Bell 1884 (O,N) 34227 doubtful scraps; Burwell, Hantzsch 1906 (D*), Macoun 1910 (O,G,N,C), Malte 1928 and 33 (O,G,N,C), Porsild 1930 (O*), Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Wakeham Bay, Polunin 1936 incl. 1386 1413 1420 f. *subglobosus*, Wolstenholme, Malte 1928 (O) 120997 f. *subglobosus*, Polunin 1934 and 6 incl. 233 234 f. *subglobosus*.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B) 126 495 1216 as "*R. affinis*"; Nottingham Island, Bell 1884 (O, pars) 1117; Mansel Island, Bell 1884 (O). *Southampton Island*, South Bay, Polunin 1936.

157. *Ranunculus sulphureus* Solander apud Phipps, Voy. N. Pole, p. 202 (1774).

R. nivalis L. var. *sulphureus* Ledeb.

R. altaicus of authors

It is remarkable to see how many authors have failed to separate this species from *R. nivalis*, when actually it is abundantly distinct in its more rigid and stocky form, fleshy-palmate and more incised radical leaves, larger, globose fruiting heads, and hairy instead of naked receptacle (cf. Malmgren 1862, p. 236). Nor have I seen more than an occasional intermediate specimen, although the two may frequently be observed growing together; when this is the case it happens in our area that the flowers of *R. nivalis* are generally over before those of *R. sulphureus* come out. This is so also in East Greenland (cf. Sørensen 1933, p. 56), although according to Lynge (1923, p. 38) the two species flower at the same time in Novaya

¹ In Herb. Edinburgh I have recently seen specimens: (1) from Cape Warrender, Devon Island (coll. Parry 1824); (2) from Port Kennedy, Somerset Island (coll. Walker); and (3) from Somerset Island (without further locality, coll. Parry 1825).

² There is another specimen in Herb. Edinburgh, coll. Taylor 1861.

³ In Herb. Edinburgh are further specimens collected during Parry's second expedition. They come from Fury and Hecla Strait, Igloodik, and Duckett Cove.

Zemlya. *Ranunculus sulphureus* appears to vary scarcely at all in our area, even if the axes when flowering are generally somewhat less than 10 cm. but when fruiting are nearer 15 cm. high.

A specimen labelled *R. glacialis*, which I have seen in Sutherland's collection, now in the possession of Toronto University, unquestionably belongs to *R. sulphureus* (See also above); so does another specimen in the same collection, which is labelled *Ranunculus frigidus* Willd., and was published as such by Hooker (in Sutherland 1852, II, p. 189).

General Distribution. Circumpolar; more exclusively arctic than the last species, reaching the highest latitudes of land and having its northernmost station at Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 238).

E. Arctic Distribution. Fairly general over the northern half and widespread in the south, but apparently absent from the west coast of Hudson Bay and some other areas.

Occurrence. Rare to occasional in the south, becoming more frequent around Lancaster Sound and, in the Far North, at least as plentiful as *R. nivalis*. Frequently to be seen growing in company with the latter, but seems to prefer more open and lastingly sodden, boggy places. Especially characteristic of mossy marshes frequented by wildfowl. Because of the confusion with other species, I am for the citations given below ignoring almost all of the reports that are not substantiated by specimens.

1. ELLESMERE: c. almost everywhere—numerous reports (cf. Simmons 1906, p. 109) incl. *Grant Land*, ? anon. (B) as "*R. nivalis*" and "*R. glacialis*," Bartlett 1908 (N,K,C), Goodsell 1909 (N) incl. 51 as "*R. nivalis*," Dumb-bell Harbour, Feilden 1876 (K) as "*R. nivalis*," Floeberg Beach and 83° N., Feilden (K) as "*R. nivalis*"; *Grinnell Land*, Greely (G) 9, Shift Rudder Bay, Feilden (K); *Hayes Sound*, Eskimopolis (Deserted Village), Hart 1875 (K) as "*R. nivalis*," Cape Rutherford, Simmons 1898 and 9 (C); *South Coast*, Wetherill 1894 (G) 162 as "*R. nivalis*," Musk-ox Fiord, Simmons 1900 (G,N); Goose Fiord, Simmons (N,K,C).
2. DEVON, ETC., ISLANDS: c. *Devon Island*, "Cape Vera" (Simmons 1909b, p. 8); ?"Cape Warrender" (Parry ex Hooker 1826, p. 121); Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6; Cuming Creek, Borden 1904 (O) 26906 as "*R. nivalis*," *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T) as "*R. glacialis*" and "*R. frigidus*," *Somerset Island*, Parry 1825 (K,B,L) as "*R. nivalis*"; "? Regents Inlet" (Parry ex Hooker 1826, p. 121).
3. N. BAFFIN: f. Pond Inlet and near, Borden 1904 (O) 26905 as "*R. nivalis*," Mathiassen 1923 (C) scr. Ostenfeld "ad *R. nivalem*" is indeed somewhat intermediate, Joy 1924 (O), Malte 1927 (O,G), Polunin 1934 and 6; Navy Board Inlet, Lyall 1854 (K); Arctic Bay, Polunin 1936.
4. C. BAFFIN: o. Scotts Bay, Taylor, 1858 (K); Clyde, Polunin 1934 and 6.
5. S. BAFFIN: r. Upper Savage Island, Parry 1821 (K), Ross (K).
6. MELVILLE PENINSULA: o. Igloolik, Hooper 1822 (L), Parry 1823 (B,C*, S*); Barrow River, Parry (C*).
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O,G,B,C) *pars* incl. 44 (34226) as "*R. nivalis*."
(N. QUEBEC: ? Wakeham Bay, Borden 1904 (N) 62905 as "*R. nivalis*"—doubtful scrap.)
9. ISLANDS IN HUDSON, ETC., BAYS: f. Nottingham Island, Bell 1884 (O, *pars* with *R. nivalis*) 1117, Mackenzie 1886 (O) 34228 as "*R. nivalis*," Johansen 1927 (C); Mansel Island, Leechman 1936. *Southampton Island*, York Bay, Parry 1821 (C*); South Bay, Sutton 1930 (G, *pars* with *R. pedatifidus*) as "*R. nivalis*," "*Cochlearia groenlandica*," etc.; Noksaruak, Rowley 1936.

158. *Ranunculus pygmaeus* Wahlenb., Fl. Lapp., p. 157 (1812).

Although the habitat is everywhere similar, this species varies considerably in luxuriance, being much larger and more leafy in the south than in the north. Moreover, the hairiness of the peduncle is a very variable character, as is also the degree of incision of the leaves; however, I do not think that any segregation of the material from within our area is desirable or even practicable. Unlike several writers on Greenland (cf. Gelting 1934, p. 94), I have never had any difficulty in distinguishing it from *R. hyperboreus* or any other species, although admittedly it goes through the most surprising morphological changes between the flowering stage (when it is truly a pygmy among plants, with axes short and prostrate) and the time when in ripe fruit the axes are arched-ascending and often 15 cm. long.

Unlike *R. sulphureus* and some other plants that may frequent the snow-patches to satisfy their demand for moist conditions (cf. Gelting 1934, p. 96), *Ranunculus pygmaeus* seems to be a true "late-snow plant," limited to snowdrift areas because of the shelter they provide.

General Distribution. Circumpolar; arctic and alpine. Northernmost record c. 80° 25' N. in Brennevinfjord (Brandywine Bay), in the Spitsbergen Archipelago (Malmgren 1862, p. 236).

E. Arctic Distribution. Probably complete south of the Arctic Circle and general to northern Baffin, but rare or local north of Lancaster Sound and not recorded from the extreme north of Ellesmere or the west coast of Hudson Bay.

Occurrence. In the extreme south generally present wherever the habitat is suitable; in the north rather rare. Restricted to the little-vegetated inner zones of late-snow patches and hence generally overlooked, although it may grow in considerable numbers within such physiographically limited areas. Flowers and fruits abundantly; sometimes, in company with *R. nivalis*, species of *Draba*, and *Potentilla emarginata*, it is to be seen flowering very late near the centre of some of the largest and deepest snow-patches, which melt only towards autumn or not at all.

1. ELLESMERE: r. Fram Harbour, Simmons 1899 (N,K,C); "Cape Faraday" (Wetherill 1895, p. 208).
2. DEVON, ETC., ISLANDS: r. *Somerset Island*, Elwyn Inlet, Markham (K) as "*Ranunculus glacialis*"; Fury Beach, Markham (K) as "*Ranunculus glacialis*."
3. N. BAFFIN: r. Pond Inlet, Bazin 1935 (O,M), Polunin 1936.
4. C. BAFFIN: f. "Scotts Bay" (Taylor 1863, p. 325); Clyde, Polunin 1934 and 6; Cape Searle, Taylor 1860 (K); Exeter Fiord, Taylor (K). *Cumberland Gulf*, (Taylor 1863, p. 325); Pangnirtung, Polunin 1934.
5. S. BAFFIN: f. "Signuia near Cape Haven" (Schuchert and White ex Holm 1900, p. 66). *Frobisher Bay*, Palmer 1929 (P); Point Brewster, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1936. *Gordon Bay*, Fox Island, Soper 1926 (O); Cape Dorset and near, Robinson 1922 (G), Polunin 1934 and 6.
6. MELVILLE PENINSULA: r? *Vansittart Island*, Danish Island, Freuchen 1922 (C).
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G); Cape Chidley, Bell 1884 (O,G,B) incl. as "*R. hyperboreus*"; Burwell, Borden 1904 (O,G,B), Hantzsch 1906 (D*), Macoun 1910 (O,C), Malte 1928 (O,G,C), Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).

8. N. QUEBEC: c. Cape Wales, 1884 (B); "Stupart Bay" (Payne ex Lawson 1887, p. 210, sub nom. *R. hyperboreus* var. *pygmaeus*); Wakeham Bay, Polunin 1936; King George Sound, Bell 1897 (O); Sugluk, Polunin 1936; opposite Digges Island, Low 1898 (O); near Cape Wolstenholme, Bell 1885 (B).
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Nottingham Island, Johansen 1927 (C). *Southampton Island*, South Bay, Sutton 1930 (G); Coats Island, Porsild 1930 (O*).

? *Ranunculus nivalis* x *pygmaeus*

A specimen in the Arctic Herbarium at Copenhagen, collected by Frits Johansen (No. 1027) at Eric Cove (Wolstenholme) in the extreme north of Quebec in 1927, and determined by the late Prof. Ostenfeld as "*R. Sabinei*," is in several characters intermediate between *R. nivalis* and *R. pygmaeus*, and may perhaps, as agreed by Herr Eilif Dahl of Oslo, result from hybridization of these two species.

159. ***Ranunculus Sabinei***¹ R. Br. in Suppl. App. Parry's 1st Voyage, p. cclxiv (1824).

A very problematical plant, of which Robert Brown already in publishing said "Planta inter *R. nivalem* et *pygmaeam* media in Herb. D. Sabine exstat," and which by some has been considered as a probable hybrid between these two species. Not having had an opportunity of studying *R. Sabinei* in the field, I do not dare enter this controversy except to say (1) that although I have on some hundreds of occasions and in many different parts of the northern hemisphere seen *R. nivalis* and *R. pygmaeus* growing together I have only once (See above) found any suggestion of their hybridizing, in the face of which we have the point that *R. pygmaeus* is rare or absent wherever *R. Sabinei* is found, and (2) that if *R. Sabinei* is indeed of hybrid origin it probably represents *R. pygmaeus* x *sulphureus*, being far more reminiscent of the latter species than of *R. nivalis*. Thus, in the few specimens that I have seen the leaves are thick and fleshy, with rounded segments, and the receptacle is more or less hairy: and finally, according to Simmons (1906, p. 112), "The whole stalk at the ripening of the fruit [is] stiffly erect, not assurgent as in *R. nivalis*, nor arched as in *R. pygmaeus*."

General Distribution. North America; from northwest Greenland across the northern parts of the Arctic Archipelago to the mainland of western North America, including the Rocky Mountains. Northernmost record either Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 238 "the identification not certain"), or else around 82° 30' N. on the north coast of Ellesmere (Feilden and others, See citations below).

E. Arctic Distribution. Apparently fairly general in Ellesmere, but not recorded south of Jones Sound.²

¹ Published as "*Sibinii*", but named as stated for Sabine.

² A specimen that recently came to the Gray Herbarium from the Agricultural College of Oka and is labelled (and may have been reported) as "*Ranunculus Sabinei* R. Br., Ruisseau derrière la Mission, Chesterfield, Baie d'Hudson" is a mixture of algal scum, *Matricaria*, *Marchantia polymorpha*, *Chrysosplenium*, *Stellaria crassifolia*, and a little *R. hyperboreus*.

Occurrence. Said to be plentiful within its limited area. According to Simmons (1906, p. 113) it "prefers the fields of stiff clay."

1. ELLESMERE: c. *Grant Land*, Bartlett 1908 (K, *pars*) as "*R. nivalis*"; Dumbbell Harbour, Feilden (K)¹ *fide* Simmons (orig. as "*R. nivalis*"); Floeberg Beach, Feilden (K)¹ *fide* Simmons (orig. as "*R. nivalis*"); Discovery Harbour, Hart (K) as "*R. nivalis*"; Cape Faraday, Wetherill 1894 (G) *fide* Ostenfeld (orig. as "*R. pygmaeus*" and so reported by Simmons 1906, p. 114, and 1913, p. 86). *South Coast*, Musk-ox Fiord, Simmons 1900 (C); Goose Fiord, Simmons 1901 (G,N,K,C). "*West Coast, Lands End*" (Simmons 1906, p. 114).
2. DEVON, ETC., ISLANDS: r. "North Kent" (Simmons 1909b, p. 19).

160. ***Ranunculus Allenii*** Robinson in *Rhodora* VII, p. 220 (1905).

The few collections from within our area of this little-known plant are 15-20 cm. high and mostly in the early fruiting stage. They are all recent, and extend the hitherto known range into the Arctic Archipelago and also somewhat farther north on the mainland, and a collection made in 1936 at Port Harrison (Polunin, No. 1608) a little to the south of our area extends it westwards into Hudson Bay.

I am not at all sure that this plant does not represent a southern attenuated phase of *R. Sabinei*, in which case it should be reduced to varietal rank under the latter; but the available material is quite insufficient to be certain and so, pending further study, it seems best to keep them distinct—especially in view of the rather doubtful position of *R. Sabinei* itself.

General Distribution. Eastern North America, known only from the coast of Labrador, from Akpatok Island in Ungava Bay, and from various parts of Quebec. Northernmost record southeast coast of Akpatok Island, c. 60° 20' N. (Polunin 1931, specimens in British Museum).

E. Arctic Distribution. Apparently limited to Akpatok Island and the Labrador Peninsula in the extreme southeast.

Occurrence. Evidently rare. Grows on stream sides or other moist, grassy slopes, or in depressions in sheltered situations having a good snow-covering in winter.

7. N. LABRADOR: r. Bowdoin Harbour, Potter and Brierly 1934 (G) 2798 *fide* Potter.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B) several Nos. as "*R. affinis*."

161. ***Ranunculus pedatifidus*** J. E. Smith apud Rees' *Cyclop.* XXIX, No. 72 (1814).

R. affinis of authors

Concerning the name that should be used for this plant, Prof. Fernald gives an argument (1934, pp. 93 *et seq.*) with which one cannot help but agree before concluding that "Until it is more convincingly demonstrated than has yet been done that *R. affinis* and *R. pedatifidus* are specifically distinct, I am compelled to consider them two geographic varieties of a

¹ Specimens also in Herb. Edinburgh.

very polymorphous circumpolar species." Our Eastern Arctic plant, differing from the typical form in its smooth achenes and less rounded and evenly dissected leaves, thus becomes

var. *leiocarpus* (Trautv.) Fernald in Rhodora XIX, p. 138 (1917).
(*Ranunculus affinis* R. Br.; *R. arcticus* Richardson)

This, not merely in different places within our area but often in the very same spot, shows great variability in stature and in the shape and dissection of the leaves. Indeed, as I have been careful to verify on several occasions, there frequently occur in one and the same stand plants that individually look quite different, but which are mere vegetative phases connected by all transitions. Thus one extreme will be 35 cm. high and much branched, with the segments of the cauline leaves up to 5 cm. long and the petals often 1.2 cm. long, whereas a near neighbour will be less than a quarter of its height, but yet spindly looking, with poor little petals less than 0.5 cm. long and delicately cut "flabellae" scarcely exceeding this length. The differences seem to result from slight variations in exposure and the intensity of competition, and to have absolutely no taxonomic significance.

General Distribution. The whole species circumpolar, chiefly arctic and alpine. Northernmost record c. 79° 40' N. on the east bank of Videfjord, Spitsbergen (Polunin 1933, field notes).¹

E. Arctic Distribution. General or even complete in the extreme south; rare north of Cumberland Gulf, but widespread at least to southern Ellesmere.¹

Occurrence. Fairly common in the south, very rare in the north. Habitat variable, the plant being found sometimes on damp open soil or clay, but more often among grasses and flowering herbs on the banks of streams or the well-drained sides of late-snow gulches. Grows best in manured or otherwise disturbed areas; hence frequent near the shore and around old habitations. Flowers and fruits abundantly. Often attacked by a parasitic fungus that produces shining black streaks on the foliage and stems. All var. *leiocarpus*:

1. ELLESMERE: r. Harbour Fiord, Simmons 1900 (K,B,C) 2595¹.
3. N. BAFFIN: r. Arctic Bay, Polunin 1936.
4. C. BAFFIN: r. *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B) as "*R. affinis* var."; 'Quickstep Harbour', Kumlien 1878 (G).
5. S. BAFFIN: f. *Frobisher Bay*, Sewall 1927 (G), Palmer 1929 (P); Lake Harbour, Malte 1927 (O,G,C) 118862 118863, Knapp 1933, Polunin 1936. *Amadjuak District*, Bell 1897 (O) 18715, Soper 1926 (O); Bowdoin Harbour, Robinson 1922 (G), Soper 1926 (O); Cape Dorset, Soper 1926 (O).
(MELVILLE PENINSULA: ? Island at the mouth of Fury and Hecla Strait, Edwards (B*).)²
7. N. LABRADOR: r. Cape Chidley, Bell 1884 and 5 (O,B) 34 1011a; Bowdoin Harbour, Potter 1937.

¹ A note in the Kew Herbarium that reads "*Ranunculus affinis* and *Arnica augustifolia* Grinnell Land with letter from General Greely May 20, 1885" needs substantiating. It has been ignored by Simmons and others.

² A specimen that I recently saw in Herb. Edinburgh, without locality but collected by Edwards during Parry's second voyage, makes the report from Melville Peninsula practically certain.

8. N. QUEBEC: c. Diana Bay, Knapp 1936; Payne Bay, Ney and Courtright 1936; Wakeham Bay, Johansen 1927 (C*), Malte 1927, 8, and 33 (O,G,C) incl. 118861 120204 120216, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; Digges Island, Bell 1884 (O) 1011; River Kovik, Low 1898 (O) 23004; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: 1? *Southampton Island*, South Bay, Malte 1928 (O) 120584, Sutton 1930 (G, pars), Polunin 1934; Walrus Island, Baird 1936.
10. W. COAST HUDSON BAY: c. *Roes Welcome*, Whale Point, Freuchen 1923 (O,C) 684; Depot Island, Comer 1893 (G); Chesterfield, Tyrrell 1893 (O) 1010, Birket-Smith 1922 (C) 541, Freuchen 1923 (O,C) 717, Malte 1928 (O,G,C) 120467 120527, Polunin 1936; Rankin Inlet, Macoun 1910 (O,G,C) 79057; Cape Eskimo and near, Macoun 1910 (O) 79058, Birket-Smith (C) 1019 1020.

162. *Thalictrum alpinum* L., Sp. Pl. ed. 1, p. 545 (1753).

The only record of this species from within our area, which is with a single exception (cf. Fernald and Sornborger 1899, p. 100) the only one from Atlantic North America north of the region immediately surrounding the Strait of Belle Isle, is based on a scrap in the National Herbarium of Canada at Ottawa. The label indicates that it was collected in 1884 by Dr. Robert Bell at Cape Chidley (Chudleigh). The species is unmistakable; nor can there be much doubt about the locality, the discovery having been quickly reported by Macoun (1886, p. 479). And indeed this plant, particularly as it goes so far north in both East and West Greenland, was fully to be expected in our area. Probably it has merely been overlooked elsewhere in the Labrador Peninsula.

General Distribution. Circumboreal; chiefly subarctic and alpine. Northernmost stations Ankerplads, 73° 38' N. in East Greenland (Seidenfaden 1930, p. 374), and a similar latitude in Novaya Zemlya (Lynge 1923, p. 40).

E. Arctic Distribution. Known only from the northernmost point of Labrador in the extreme southeast.

Occurrence. Very rare. Not seen by me in our area, but elsewhere grows best on sheltered grassy slopes among rocks or *Salix* bushes.

7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O).

163. *Coptis groenlandica* (Oeder) Fernald in Rhodora XXXI, p. 142 (1929).

C. trifolia Salisb. in part.

This latest addition to our flora, for which thanks are due to Professor David Potter, who found it during the summer of 1937 in Frobisher Bay, is new also to the entire Arctic Archipelago. The single plant that Professor Potter sent me was indistinguishable even in size from my own specimens collected the same summer on the other side of Davis Strait, in southwest Greenland; it belongs, as was to be expected, to the general Eastern American series, which has recently been separated by Professor Fernald in the manner designated above.

General Distribution. Eastern North America, stretching from southern Greenland and southeast Baffin westwards to Manitoba and southwards to Iowa, Tennessee, and North Carolina. Northernmost record Kangerdluarssuk east of Agto, 67° 58' N. in West Greenland (cf. Porsild 1920, p. 81).

E. Arctic Distribution. Known only from Frobisher Bay in southeast Baffin.

Occurrence. Evidently very rare, or at least extremely local. Only a single collection has been made in our area, and no other within a considerable distance even of the southern boundary.

5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 No. 8197.

PAPAVERACEAE

164. *Papaver radicum* Rottb. in Skr. Kjøbenhavnske Selsk. Laerd. Vidensk. X, p. 455 (1770).

P. nudicaule of authors, not L.

P. nudicaule L. var. *arcticum* Elkan

P. alpinum of authors, not L.

Whether or not the recent wholesale "splitting" of the Old World members of this group (cf. Nordhagen 1931) is justified I am quite unqualified to say, but certainly the material from within our area, variable as it is, seems to belong to one series that should be kept together under a single specific name. This is the policy of all others who have studied *Papaver radicum* in high-arctic regions—cf. Simmons (1906, pp. 99 *et seq.*) on Ellesmere, Gelting (1934, pp. 86 *et seq.*) on East Greenland, and Scholander (1934, pp. 30-31) on Spitsbergen; also Tolmatchew (1930, p. 34). It is also the opinion of Dr. Heimburger of Ottawa, who has for some years made a hobby of cultivating members of this group and who was kind enough to look through my material, and even Professor Nordhagen, in a recent letter, does not deny such a possibility—at least as far as the Canadian Eastern Arctic is concerned. The variations within this "form series" are almost innumerable, but the characters appear to be in many cases so dependent upon local conditions, and in others so lacking in constancy, that it would be futile to attempt to enumerate even the most striking forms—at least without further and more careful study in the field. The size and form of the leaves and their degree of dissection, the hairiness of all parts of the plant, the size of the flower and the shape and colour of the petals—all vary within wide limits, and, varying often quite independently of one another, give the most complex results. The situation in our area, although paralleled by that in East Greenland (cf. Gelting 1934, pp. 85-8), seems to be quite different from that in Scandinavia where, according to Nordhagen (cf. 1933), the various entities became differentiated through isolation at certain centres during the last period of glaciation, and subsequently "stayed put" or spread so inconsiderably that their areas to this day have not come into contact with one another, with the result that they stand out at least as distinct "local races". On the other hand in our area, even if such isolation and endemism occurred, the

plants it seems quickly spread (everywhere in the case of *Papaver*) over the more barren lands exposed after the final retreat of the ice and, intermingling and hybridizing, soon lost such individuality as they may once have possessed.

With regard to size, *Papaver radicum* in our area is most frequently around 15 cm. high, but in favourable situations even in the Far North it may form a luxuriant tuft whose topmost flowers stand more than double this height above the ground. In such individuals the flowers may be 4 cm. in diameter. On the other hand, in exposed places the axes may be less than 10 cm. high, and the flowers a bare centimetre in diameter when fully expanded. The only form that seems worth separating in our area is the white-flowered one that turns up occasionally in the Far North and very rarely elsewhere; for the time being it is best styled

var. **albiflorum** Lange, *Conspectus Fl. Groenl.* 1, p. 52 (1880).
(*P. radicum* var. *Hartianum* Simmons)

Concerning a specimen of this that he collected not far south of our area, Abbe has recently remarked (1936, p. 151), to my mind with justification, that "It is so rare...that on the genetical basis...[it]...would seem to be a case of sporadic, recessive mutation, rather than due to the segregation of individuals out of a population carrying factors for both white and yellow".

General Distribution. Circumpolar; all over the Arctic. One of the four species recorded from the northernmost botanical locality on earth, viz., Lockwood Island, 83° 24' N. on the north coast of Greenland (Lockwood ex Simmons 1909, p. 74).

E. Arctic Distribution. Surely complete on ice-free land.

Occurrence. Common in the south, abundant everywhere in the north. Grows chiefly in poorly vegetated, dry places where it may be the only plant that is at all evident or abundant, so characterizing "Papaver barrens" (cf. Summerhayes and Elton 1928, p. 201). On the other hand it is rarely important and never dominant where the vegetation is closed. Seems to be indifferent to varying degrees of exposure and summer drought, except that it tends like other plants to nanism in the most exposed situations (See above). Flowers and fruits abundantly, in places almost throughout the summer, and even when growth is stopped by persistent heavy day frosts the half-withered and now generally verdegris-green petals may long remain attached, and in snow-free areas remind the arctic traveller that there was a summer.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. *North Coast*, Cape Columbia, Aldrich (K) as "*P. alpinum* var.", Cape Discovery 83° N., Aldrich (K) as "*P. alpinum* var.", Cape Faraday, Wetherill 1894 (G) 156 as "*P. nudicaule* var. *arcticum*"; *South Coast*, Wetherill 1894 (G) 163 as "*P. nudicaule* var. *arcticum*", Harbour Fiord, Simmons 1901 (N) 2398 var. *albiflorum*, Goose Fiord, Simmons 1901 (K,C) 2997 var. *albiflorum*, Fram Fiord, Simmons 1899 (C) 1414, *scr.* Lundstrom 1923 "*P. nudicaule* x *radicum*."
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. "Cape Vera" (Simmons 1909b, p. 8, incl. var. *albiflorum*), Dundas Harbour, Polunin 1934 and 6 incl. var. *albiflorum*.

3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Pond Inlet, Bazin 1935 (M) incl. var. *albiflorum*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. (B) ? "Papaver luteum brought from Davis's Streights by Capt. Craycroft 1732", Exeter Fiord, Taylor (K) as "P. alpinum."
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Signuia near Cape Haven, Schuchert and White 1897 (N) 111 as "P. alpinum", "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 420, sub nom. *Papaver arcticum*).
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 1470; Burwell, Borden 1904 (O), and six others (O,G,N,C,D*); Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Stupart Bay, Payne 1886 (T) 27 28 as "P. alpinum."
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from all the larger islands.
10. W. COAST HUDSON BAY: c? Wager Bay, Macoun 1910 (O); Chesterfield, Tyrrell 1893 (O) 100718, and five others (O,G,C).

CRUCIFERAE

165. *Cochlearia officinalis* s.l. (L., Sp. Pl. ed. 1, p. 647 (1753)).

After looking through a circumpolar series of arctic and subarctic *Cochleariae* one is almost bound to agree with Hultén (1928, p. 146), Scholander (1934, p. 33), and others that it is not possible to keep *C. officinalis*, *C. arctica*, *C. groenlandica*, and *C. oblongifolia* as separate species.¹ I, accordingly, treat them as varieties (subspecies) of one polymorphic coenospecies, after the manner of Andersson and Hesselman (1900, pp. 34-40), although with regard to these varieties the wide range and frequent intermediate stages strongly suggest that they may be mere ecological forms, at least in one or two cases.

(1) The typical form is rather closely approached by occasional specimens from the south of our area that are upright in habit and have a much-branched and relatively leafy axis. Some specimens from Hebron and Churchill south of our area seem properly referable to the typical form.

(2) Much the commonest form within our area, and often the only one in the Far North (cf. Simmons 1906, p. 98) is, however,

var. **groenlandica** (L.) Gelert apud Andersson and Hesselman, Spetsb. Kärlv., p. 37 (1900).
(*Cochlearia groenlandica* L.)

This is the familiar arctic (dwarfed and often very tiny) rosette form with the siliques ovoid and acute and the diaphragm broadly ovate. It occurs probably throughout our area on ice-free land, but in the extreme south is largely confined to the less favourable inland habitats.

¹ I am well aware that the situation is further complicated by the fact that, among these, *C. groenlandica* alone has the basic chromosome number 14 (cf. John Innes Horticultural Institution: report for the year 1925, p. 24).

(3) Apparently most closely allied to the last variety, of which it may be a mere luxuriant phase, and often treated as a variety of *C. groenlandica* when this is maintained as a separate species, we have

var. **oblongifolia** (DC.) Gelert apud Andersson and Hesselman, Spetsb. Kärlev., p. 39 (1900).

This, too, is only weakly ascending, but its branches are often 30 cm. or more long. It has the capsules nearly spherical and occurs in the most favourable saline or manured habitats, chiefly in the southern half of our area.

(4) Also fairly frequent in the south, especially in closed areas where it has to compete with other plants, is a more slender but upright form with the siliques oblong and acute and the diaphragm ovate to lanceolate:

var. **arctica** (Schlecht.) Gelert apud Andersson and Hesselman, Spetsb. Kärlev., p. 40 (1900).

This is apparently the plant that was described by Robert Brown as *Cochlearia fenestrata*. Two specimens so identified by Brown himself, collected during Parry's Second Voyage (probably on Melville Peninsula) and now the property of the Gray Herbarium, clearly belong to var. *arctica*,¹ even if *C. fenestrata* is "variously referred by authors to *C. groenlandica*, *C. anglica* and *C. officinalis*" (Robinson 1895, p. 146).

General Distribution. The whole species circumpolar; all over the Arctic. Northernmost record 82° 30' N. in Grant Land, Ellesmere (Bartlett 1908, specimens in New York, Kew, British Museum, and Copenhagen Herbaria).

E. Arctic Distribution. Probably complete on ice-free land, at least around the coasts.

Occurrence. Generally common, especially along the seashore, where it grows chiefly in open, sandy areas and may reach a height of 20 cm. or more. Inland it tends to be much smaller, frequently only 1-3 cm. high, and occurs chiefly in open clayey areas, but also in marshes. It is especially characteristic of manured areas, and grows luxuriantly on even the most exposed and northerly bird-cliffs. Flowers abundantly, often throughout the summer, and sets ripe seed plentifully. Probably most often biennial. Like Simmons (1906, p. 99), I have not in the area of the present treatise or any other part of the Arctic seen any evidence that plants that come into flower in the autumn can continue flowering and fruiting the next spring in the manner described by Kjellman (1884, pp. 478-81).

1. ELLESMERE: c. everywhere—numerous records from almost all localities, mostly var. *groenlandica*, incl. *Grant Land*, Bartlett 1908 (N,K,B,C) as "*Cochlearia groenlandica* var. *minor*", Floeberg Beach, Feilden (K,B) as "*Cochlearia anglica* var. *fenestrata*", Fram Harbour, Simmons 1899 (N,K,C); incl. Cape Faraday (Wetherill 1895, p. 209, sub nom. *Cochlearia fenestrata*).

¹ So, I think, does the type collection of *Cochlearia fenestrata* in the British Museum, half of which constitutes the type of "*Draba corymbosa* R.Br."

2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. *Devon Island*, "West Fiord, Cape Vera, Castle Island, and Devils Island" (Simmons 1909b, pp. 7 *et seq.*) var. *groenlandica*, Dundas Harbour, Malte 1927 (O,G,C) var. *groenlandica*; *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T) as "*C. fenestrata*"¹; *Somerset Island*, Parry 1825 (K) var. *groenlandica*.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Pond Inlet, Soper 1923 (O,C) incl. 111521 var. *arctica*, Arctic Bay, Malte 1927 (O,G,C) var. *groenlandica*, Polunin 1936 incl. var. *arctica*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Polunin 1934 and 6 incl. var. *oblongifolia*, Cape Searle, Taylor 1860 (K,B) var. *groenlandica* as "*C. fenestrata*"; *Cumberland Gulf*, Kumlien 1878 (G,N) var. *groenlandica* fide Robinson, Pangnirtung, Polunin 1934 and 6 incl. var. *oblongifolia*; *West Coast*, Camp Kungovik, Soper 1929 (O) 125992 var. *arctica*.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Loks Land, Palmer 1929 (P) 642399 var. *groenlandica*; *Frobisher Bay*, Sewall 1927 (G) 316 var. *groenlandica*; *South Coast*, Lake Harbour, Polunin 1934 and 6 incl. var. *oblongifolia*.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities, incl. Neerlo Nakto, Parry (B) var. *arctica* as "*C. fenestrata*", Igloodik, Edwards 1823 (B,C*) as "*C. fenestrata*", Winter Island, Parry (B) as "*C. fenestrata*", Duckett Cove, Parry 1821 (C*) as "*C. fenestrata*".
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. Lacey Island, Potter and Brierly 1934 (G) 2835 var. *groenlandica*, Cape Chidley, Bell 1884 (B) 182 var. *oblongifolia*, Burwell, Johansen 1927 (C) var. *groenlandica* fide Ostenfeld, Malte 1928 and 33 (O,G,N) incl. 119999 apprg. var. *groenlandica*, 120168 var. *groenlandica*, and 126793 var. *oblongifolia*, Polunin 1931, 4, and 6, incl. var. *oblongifolia* and apprg. typical form.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Cape Wales, Bell 1884 (O, *pars*) 2061 var. *groenlandica*, Wakeham Bay, Johansen 1927 (C) 1175 var. *arctica* fide Ostenfeld, Malte 1928 and 33 (O,G,C) 120248 var. *arctica* fide Malte and 126931 var. *oblongifolia*, Polunin 1936 incl. var. *oblongifolia*, Sugluk, Polunin 1936 incl. var. *oblongifolia*, Digges Island, Bell 1884 (O) 34317 var. *groenlandica*.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. Akpatok Island, Polunin 1931 (B) many Nos. var. *groenlandica* as "*Cochlearia groenlandica*", 1011 var. *oblongifolia* as "*C. fenestrata*", and 560 690 778 783 829 1331 var. *arctica* as "*C. fenestrata*"; Mansel Island, Bell 1884 (O) 34316 var. *groenlandica*; *Southampton Island*, (?Lyon ex Hooker 1825b, p. 188, sub nom. *Cochlearia fenestrata*?); South Bay, Malte 1928 (O,C) var. *groenlandica*, Sutton 1930 (G, *pars*) incl. var. *oblongifolia* as "*C. groenlandica*", Polunin 1934 and 6 incl. var. *arctica*.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Fullerton, Borden 1904 (O) var. *groenlandica*, Chesterfield, Polunin 1936 var. *groenlandica*, Rankin Inlet, Macoun 1910 (O,G,N,C) 79076 var. *oblongifolia*.

166. *Eutrema Edwardsii* R. Br., in Suppl. App. Parry's 1st Voyage, p. cclxvii (1824).

This species appears to go unchanged around the top of the world—unchanged, that is, in any feature of taxonomic importance. It does, however, vary considerably in height and general robustness—without doubt merely in accordance with local habitat conditions. Thus within our area the axis is in some cases quite crass, with an enlarged leafy

¹ Mis-spelt "*fenestralis*" in the report (Sutherland 1852, II, p. clxxxix).
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raceme consisting of numerous flowers, whereas in others (which appear to be starved) it is very thin, with only a few very small leaves and no more than two or three siliques at the top.

It should be noted that material now in the possession of the Gray Herbarium, collected during Parry's second voyage and labelled by Robert Brown himself as "*Eutrema Edwardsii* 1.2 Mr. Edwards, 3 Mr. Fisher", is badly mixed. Thus, No. 3 is clearly a good specimen of *Arabis arenicola*. Brown described *Eutrema Edwardsii* as having "Folia... rarissime paucidentata", presumably because of such mixing in the material before him, when actually the leaves of *Eutrema Edwardsii* are always entire.

General Distribution. Circumpolar; chiefly arctic and including the farthest north lands (cf. map given by Fernald 1925, p. 337). Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 237).

E. Arctic Distribution. Probably complete on ice-free land, but possibly absent from some areas in the Far North. (Thus Simmons (1906, p. 97) gives it as "Absent from Hayes Sound" where it was, however, subsequently collected by Dr. Malte.)

Occurrence. Fairly common at almost all points visited, but rarely at all abundant even locally. Has such a wide range of tolerance to most of the locally varying conditions that it is to be found in almost any habitat or community, from marshes and late-snow patches to open clay plains and dry heaths. The mature fruiting axes vary in height from 10 to 40 or more cm. Apparently somewhat calciphilous, but of no real ecological significance either as an indicator or as a component of vegetation. Flowers and fruits abundantly and successfully.

1. ELLESMERE: f. *Grinnell Land*, Greely (G); Bache Peninsula, Malte 1927 (O,C). *South Coast*, "Fram Fiord" (Simmons 1906, p. 97); Harbour Fiord, Simmons 1900 (N); Musk-ox Fiord, Simmons 1900 (C); Goose Fiord, Simmons 1901 (K,C).
2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6; Powell Creek, Lyall 1852 (K, pars). "*Somerset Island*, Port Kennedy" (Walker ex Hooker 1861, p. 82); ?"Regents Inlet" (Parry ex Hooker 1826, p. 123).
3. N. BAFFIN: c. *Bylot Island*, Korokdjuak, Mathiassen 1923 (C); Tuarpat, Freuchen 1924 (C); Pond Inlet and near (Walker ex Hooker 1861, p. 82), and eight others (O,M,G,C); Arctic Bay, Malte 1927 (O,G), Polunin 1936; Port Bowen, Parry 1825 (K,B); Foss Fiord, Freuchen 1922 (C).
4. C. BAFFIN: o. Nettilling Lake, Soper 1925 (O). *West Coast*, Camp Kungovik, Soper 1929 (O).
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G,C); Point Brewster, Potter 1937. *South Coast*, Lake Harbour and near, Soper 1931 (O), Polunin 1934 and 6; Upper Savage Island, Bell 1884 (O). *Gordon Bay*, Fox Island, Soper 1926 (O,N); Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Soper 1926 (O), Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: c. Neerlo Nakto, Parry (C); Igloolik, Edwards B. S*,C*, Parry 1823 (B,C); "Barrow River" (Parry ex Hooker 1825, p. 388); Duckett Cove, Parry 1823 (C); Repulse Bay, Edwards (B), Olsen 1922 (C). *Vansittart Island*, Danish Island, Freuchen 1922 (C).

7. N. LABRADOR: o. Burwell, Johansen 1927 (C), Malte 1928 and 33 (O,G), Polunin 1936.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O,B). *Southampton Island*, (?Lyon ex Hooker 1825b, p. 188); "York Bay" (Parry ex Hooker 1825, p. 388); South Bay, Malte 1928 (O,G), Sutton 1930 (G), Polunin 1934 and 6, Baird 1936; Coats Island, Porsild 1930 (C*).
10. W. COAST HUDSON BAY: f. Depot Island, Comer 1893 (G); Chesterfield, Malte 1928 (O,G,C), Polunin 1936; near Eskimo Point, Birket-Smith 1923 (O,C).

167. *Cardamine bellidifolia* L., Sp. Pl. ed. 1, p. 654 (1753).

This is yet another of the small and insignificant plants whose apparently disrupted "distribution" in the Arctic and Subarctic is with little doubt due to incomplete exploration and frequent overlooking, as in my experience it is to be found everywhere that a proper search is made. When in flower it is generally only a very few centimetres high, but I have measured specimens in fruit with axes having a total length of 15 cm. These larger specimens are also of much looser habit, consisting of a number of branches produced beneath the surface of the mossy substrate in which the plants grow. Although commonly known by a varietal name, they seem to constitute little more than an ecological form occasioned by the habitat (cf. Abbe 1936, p. 152). As such they are now often ignored by those who know the species in the field, but nevertheless in full development are sufficiently striking to be retained as

f. *laxa* (Lange) Polunin MS. (Canadian Field-Naturalist 1940).

General Distribution. Circumpolar; alpine and arctic, including the farthest north land masses. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 235).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Occasional to fairly common in most places, but never really abundant or ecologically important. Grows scattered in mossy heaths, also in snow-patches and marshes. Indeed it is liable to be found in almost any habitat, including rock crevices and talus heaps and screes as in Lapland. Flowers and fruits abundantly and quickly; the more luxuriantly growing individuals afford an excellent salad reminiscent of the familiar English mixed "Mustard and Cress".

1. ELLESMERE: c. *North Coast*, Dumbbell Harbour, Feilden 1876 (K,B); Floeberg Beach, Feilden (K,B)¹. "*Grinnell Land*, St. Patrick's Bay and Discovery Harbour" (Hart 1880, p. 179). *Hayes Sound region*, several localities (cf. Simmons 1906, p. 97), e.g., Buchanan Bay (Turnstone Beach), Feachem 1937, Eskimopolis, Simmons 1899 (N), Bedford Pim Island, Simmons 1899 (C), Cape Sabine, Feilden 1875 (B), Rice Strait, Feachem 1937. *South Coast*, Fram Fiord, Simmons 1899 (G); Craig Harbour, Polunin 1934 and 6, Feachem 1937; Harbour Fiord, Simmons 1900 (K); "Goose Fiord" (Simmons 1906, p. 97).
2. DEVON, ETC., ISLANDS: c. "North Kent" (Simmons 1909b, p. 20). *Devon Island*, Dundas Harbour, Malte 1927 (O), Polunin 1934 and 6 incl. f. *laxa*. *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T,K) incl. f. *laxa*. *Somerset Island*, Parry (B), (MacLaren ex Hooker 1826, p. 122).

¹ There is another specimen in Herb. Edinburgh.

3. N. BAFFIN: c? Pond Inlet, Polunin 1934 and 6; Arctic Bay, Polunin 1936 incl. f. *laxa*.
4. C. BAFFIN: c. "Scotts Bay and Cape Searle" (Taylor 1863, p. 325); Clyde, Polunin 1934 and 6 incl. f. *laxa*; Exeter Fiord, Taylor (K*). *Cumberland Gulf*, (Taylor 1863, p. 325); Pangnirtung and near, Soper 1924 (O), Polunin 1934 and 6 incl. f. *laxa*; Blacklead Island, Soper 1924 (O); Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: c. "Signuia near Cape Haven" (Schuchert and White ex Holm 1900, p. 66); Loks Land, Palmer 1929 (P) as "*Cochlearia officinalis*"; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1936 incl. f. *laxa*; "White Strait" (Tarr ex Rowlee and Wiegand 1897, p. 420); Cape Dorset, Malte 1928 (O), Polunin 1934 and 6 incl. f. *laxa*.
6. MELVILLE PENINSULA: f? Igloolik, Parry (B), (Edwards ex Hooker 1825, p. 389).
7. N. LABRADOR: f. Burwell, Malte 1928 and 33 (O,G,C), Polunin 1936 incl. f. *laxa*; Bowdoin Harbour, Potter 1937; Ikordlearsuk Mountain, Abbe 1931 (G).
8. N. QUEBEC: f. Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G), Polunin 1934 and 6 incl. f. *laxa*; Cape Smith, Polunin 1936 incl. f. *laxa*.
9. ISLANDS IN HUDSON, ETC., BAYS: f? *Southampton Island*, South Bay, Sutton 1930 (G), Polunin 1936.
10. W. COAST HUDSON BAY: o? Chesterfield, Malte 1928 (O), Polunin 1936.

168. *Cardamine pratensis* L., Sp. Pl. ed. 1, p. 656 (1753).

The typical form of this polymorphic species appears to be absent from our area, as indeed it is from most of North America (cf. Fernald 1920, pp. 11 *et seq.*); almost all our material belongs instead to the usual arctic

var. *angustifolia* Hook., Fl. Bor.-Am. I, p. 45 (1829).

This probably includes the far-northern aquatic individuals, even if their leaflets may be unusually broad.

However, in the extreme south of our area, and more plentifully somewhat farther south still (e.g., at Churchill), there occur specimens with white flowers and broad lateral leaflets to the basal leaves. These must be referred to

var. *palustris* Wimm. and Grabow., Fl. Siles, II, i, p. 266 (1829).

Flowering specimens of both these varieties of *Cardamine pratensis*, the familiar "Cuckoo flower" or "Lady's Smock" of English meadows, sometimes exceed a height of 25 cm. in the south of our area, and var. *angustifolia* may also flower well in northern Baffin. Generally, however, even in the south, the species is to be seen only in the vegetative condition, each individual bearing a few scraggy-looking leaves, which become more and more reduced as we go farther north, until often the lateral pinnae are entirely lost, the leaf consisting of one terminal leaflet on a long petiole. The species has never yet been seen flowering in Ellesmere (cf. Simmons 1906, p. 96).

General Distribution. The whole species circumpolar; widely ranging latitudinally, including all the high-arctic land masses. Northernmost record Discovery Harbour, 81° 43' N. in Ellesmere (Hart, specimen in Kew Herbarium).

E. Arctic Distribution. General and perhaps almost complete on ice-free land except in the Far North, where it is little known.

Occurrence. Fairly common in the south and occasional as far north as Lancaster Sound, but rare north of there. Confined to damp habitats, growing chiefly in streamside marshes or around the margins of freshwater pools and lakes. In the Far North it is most often completely submerged, or grows in soft, mossy areas that are inundated in early summer. There it reproduces only by vegetative buds (cf. Holm 1922, p. 37B, and Gelting 1934, p. 64). The specimens cited below belong to var. *angustifolia* unless otherwise stated:

1. ELLESMERE: r. Discovery Harbour, Hart (K). *Hayes Sound*, Skröling Island, Simmons 1899 (N,C).
2. DEVON, ETC., ISLANDS: r. *Devon Island*, Dundas Harbour, Polunin 1936; Beechy Island, Pullen 1852 (K, pars) as "*Cardamine digitata*".
3. N. BAFFIN: o. Pond Inlet, Polunin 1934 and 6, Bazin 1935 (O,M); Arctic Bay, Polunin 1936.
4. C. BAFFIN: r. *Nettilling Lake*, Soper 1925 (O,N), Tredgold 1925 (O); Koukdjuak River, Soper 1925 (O).
5. S. BAFFIN: f. *Frobisher Bay*, Palmer 1929 (P). *South Coast*, Lake Harbour, Polunin 1934 and 6; "Upper Savage Island and Ashe Inlet" (Bell ex Macoun 1886, p. 486); Amadjuak district, Bell 1897 (O); Cape Dorset and near, Soper 1926 (O), Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. Neerloo Nakto, Parry (B)¹; Igloolik, Edwards (B, note only), Parry 1823 (B,C). "*Interior*" (Rae 1850, p. 213). *Vansittart Island*, Danish Island, Freuchen 1922 (C).
7. N. LABRADOR: f. Cape Chidley, Bell 1884 (O); Burwell, Hantzsch 1906 (D*), Malte 1928 (O,G,C) incl. 120130 var. *palustris*, Polunin 1931, 4, and 6 incl. var. *palustris*.
8. N. QUEBEC: f. Diana Bay, Knapp 1936; Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; Digges Island, Bell 1884 (O,B); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B) incl. 1251 as "*Campanula* cf. *rotundifolia*"; Nottingham Island, Johansen 1927 (C); Mansel Island, Leechman 1936. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 189); Edwards 1821 (B, note only); South Bay, Malte 1928 (O,G), Sutton 1930 (G), Polunin 1934 and 6, Baird 1936; Walrus Island, Baird 1936; Cape Low, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: l? Chesterfield, Freuchen 1923 (O,C), Malte 1928 (O), Gardner 1933 (G), Polunin 1936 incl. var. *palustris*.

Cardamine hyperborea O. E. Schulz

As Simmons (1913, p. 91) remarks, there is "certainly something wrong about" the sheet in the Kew Herbarium from "Beechey Island, Capt. Pullen"—sub nom. *Cardamine digitata* Richardson. The label evidently belongs to the large specimens of *C. pratensis* var. *angustifolia* that are placed on either side of the small ones of *C. hyperborea*, which latter have a label above them reading "Cambridge Bay, Anderson 1853 H.M.S. Enterprise." This is on Victoria Island, where *C. hyperborea*, a plant of "Western" relationships, is well known to occur, there being on the same sheet

¹ There is another specimen in Herb. Edinburgh.

in Kew Herbarium a specimen from "South Coast of Victoria Land, July Aug. 1851 Dr. Rae." However, this does not mean that *Cardamine hyperborea* may not one day turn up in our area, for it was found as near to the western boundary as Orpiktujoq Island in Baker Lake, by Kaj Birket-Smith of the Danish Fifth Thule Expedition in 1922.

169. *Lesquerella arctica* (Wormskj.) S. Watson in Proc. Am. Acad. XXIII, p. 254 (1888).

Vesicaria arctica (Wormskj.) Richardson

This peculiar plant grows plentifully if very locally at Lake Harbour and Arctic Bay, in the south and north, respectively, of Baffin. I have also seen material from other widely separated (but always highly calcareous) regions in our area. It appears to be a marked and perhaps obligate calciphile, whose peculiarly disrupted distribution is probably bound up with this property.

Apart from the perforation of the septum, which is apparently a very fickle character (cf. Ekman 1928, p. 483), *Lesquerella arctica* varies scarcely at all in our area. Even if it may change in size and luxuriance, being reduced to a close rosette in the most exposed situations, the prostrate or weakly ascending axes are usually around 12 cm. long in the fruiting stage, and in general robustness similar in Greely's specimens taken in northern Ellesmere and some of mine from nearly 20 degrees of latitude farther south.

General Distribution. Arctic and subarctic North America, stretching from Greenland and Ellesmere southwards to Labrador and westwards to northern Mackenzie. (This excludes the segregates *L. Purshii* (Wats.) Fernald of the Laurentine regions and *L. montevidensis* (Eichl.) Wats. of South America.) Northernmost record Nordenskjöld Fiord, 82° 37' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 237).

E. Arctic Distribution. Very widespread on calcareous substrata almost throughout, but apparently absent from "acidic" areas.

Occurrence. Local; apparently confined to calcareous regions, where it grows on plains or knolls of gravel or stiff clay. Never noted as really abundant or important. Flowers and fruits quickly and plentifully.

1. ELLESMERE: f. *Grinnell Land*, Greely (G) 31; Discovery Harbour, Hart (K,B); "Bellot Island" (Hart 1880, p. 179). *Hayes Sound region*, Feilden 1875 (K,B), "several localities" (Simmons 1906, p. 95). *South Coast*, "Fram and Harbour Fiords" (Simmons 1906, p. 95); Musk-ox Fiord, Simmons 1900 (C).
(DEVON, ETC., ISLANDS: ? "Regent Inlet", Parry (K*.)
3. N. BAFFIN: o. Pond Inlet, Bazin 1935 (M); near Qorlortoq, Freuchen 1924 (C); Arctic Bay, Malte 1927 (O,G,C), Polunin 1936.
5. S. BAFFIN: l. Lake Harbour, Malte 1927 and 8 (O,G,C), Knapp 1933, Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. Igloolik, Parry 1822 (B,C,S*) as "*Alyssum spatulatum*" and "*Vesicaria arctica*"; Winter Island, Parry (B). *Vansittart Island*, Danish Island, Freuchen 1922 (C).
9. ISLANDS IN HUDSON, ETC., BAYS: o. *Southampton Island*, Fisher 1821 (B); York Bay, Olsen 1922 (C); South Bay, Sutton 1930 (G), Polunin 1936; Coats Island, Porsild 1930 (O*).

170. *Draba alpina* s.l. (L., Sp. Pl. ed. 1, p. 642 (1753)).

This species is so extremely variable in the shape and size of its pods and leaves, and also in the form and abundance of its hairs, that some authors still separate from it a whole series of microspecies. However, after studying some hundreds of specimens from within or near our area, and seeing how each form can pass by gradual stages into almost any other, I feel that the only practical course to take will be to follow Simmons (1906, pp. 80 *et seq.*) and Fernald (1934c, p. 285) in treating *D. alpina* in the aggregate sense. Within this series there are recognizable in our area the following phases:

(1) The typical form is the most common in the south, and persists northwards in the more favourable situations to southern Ellesmere, where it is, however, very rare.

(2) Occasional in exposed habitats in the south, but becoming more and more predominant as we go north until in the Far North it is the usual form, we have

var. *nana* Hook., emend. Fernald in *Rhodora* XXXVI, p. 285 (1934).

(*Draba Bellii* Holm)¹

This is the plant that Simmons (1906, p. 82) treats as *D. alpina* L. var. *glacialis* (Adams) Kjellm.; I am taking it as also including *D. oblongata* R.Br.,² although Simmons keeps this last as a separate variety of *D. alpina*, although admitting that it is "distinguished by a strong and dense hair-covering but not sharply defined from the main form."

(3) On Southampton Island and the adjacent parts of southwest Baffin there occurs a form that further investigation (particularly of flowering material) may possibly reveal to belong to an undescribed species, but which for the time being seems best placed as another variety of *D. alpina*, to which it is indeed very closely related:

var. *inflatisiliqua*³ Polunin in *Jour. Bot.* LXXVI, p. 99 (1938).

"Differs from the typical form in having the smooth siliques not ovate or oblong or flattened but fusiform, acute at both ends and circular or elliptic in transverse section."

The small and pointed, inflated capsules are most striking; nor are intermediates to be found in spite of the presence of the typical form in the same locality. But the "characters" to be seen in fruiting material are scarcely sufficient for specific segregation, much as I dislike having to recognize several varieties of the same "species" in the same locality.

¹ And also, according to Fernald (1934c, p. 286), var. *Pohlei* O. E. Schulz, "cited from Cape Chidley, and differing only in its narrow siliques".

² Gelert (1898, p. 300) came to much the same conclusion after visiting the British Museum and Kew Herbarium and revising all the *Drabae* in the Arctic Herbarium of the Botanical Museum in Copenhagen, for he placed Brown's plant with *D. alpina*, giving as synonyms *D. Adamsii* Ledeb., *D. leptopetala* Th. Fr., *D. micropetala* Hook., etc. As Simmons remarks (1906, p. 81), this indeed seems in the present state of chaos to be the only thing to do, viz., "to throw together a great many species distinguished by different authors, but impossible to keep apart by the characters given for them".

³ This may possibly be *D. alpina* var. *longipes* Hook. in Lyon, *Brief Narr.*, p. 187 (1825), described from Southampton Island or near, although Hooker's differs from my plant in having "the *pedicells* produced from throughout [the] whole length" of the scape. In any case I came across Lyon's book only when the present work was in proof, when it was too late to alter all the citations; moreover the Hookerian name was not published formally.

(4) Occasional specimens are to be found that, through var. *nana* and particularly through the phase known as *D. oblongata*, seem to connect *D. alpina* with *D. subcapitata*.

(5) Other plants, again, seem to be transitional to *D. fladnizensis* s.l. These include

var. *gracilescens* Simmons, Vasc. Pl. in the Fl. of Ellesmereland, p. 83 (1906).

This has now been found in the southern and central parts of our area as well as in Ellesmere, the specimens being generally determined by the late Mrs. Ekman as hybrids of *D. lactea*, which latter also it seems impossible to maintain as a species (cf. Fernald 1934c, p. 288).¹

General Distribution. The whole species circumpolar; all over the Arctic, including the farthest north land-masses. Also alpine, having a great range latitudinally. Northernmost record Cape Salor, 82° 54' N. on the north coast of Greenland (Wulff ex Ekman 1931, p. 468).

E. Arctic Distribution. Probably complete on ice-free land, but possibly absent from the west coast of Hudson Bay.

Occurrence. Common nearly everywhere in the south, and in the northern half practically ubiquitous, occurring in almost all land habitats. Even in the south it has a wide range of habitat tolerance, growing as well on dry clay or gravel plains as in closed marshy or late-snow areas. In the last-named situations it may be found flowering right through the summer in the Far North; elsewhere it generally ripens seed quickly and successfully. Occasional specimens of the typical form may exceed 20 cm. in height, with leaves more than 2 cm. long, but from this extreme we have all stages of reduction to poor, tiny rosettes less than 0.5 cm. high, which, in the most exposed places, look as though they will never succeed in flowering.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. *North Coast*, Floeberg Beach, Feilden (K,B) var. *nana* as "*D. rupestris*", and apprg. *D. subcapitata* as "*D. barbata*"; *Grant Land*, Bartlett 1908 (K,C) var. *nana* as "*D. barbata*"; *Grinnell Land*, Greely (G) var. *nana* as "*D. rupestris*", *Discovery Harbour*, Hart (B) var. *nana* as "*D. rupestris*", *Dobbin Bay*, Hart (B) var. *nana* as "var. *Adamsii*", *Walrus Island*, Hart 1875 (B) var. *nana* as "*D. barbata*"; *Hayes Sound region*, *Alexandra Fiord*, Simmons 1899 (N) 4196 var. *gracilescens*, *Fram Harbour*, Simmons 1899 (C) incl. var. *gracilescens*, *Bedford Pim Island*, Simmons 1899 (K) 1187 var. *gracilescens* and 1198 var. *nana* as "var. *glacialis*", *Cape Sabine*, Feilden 1875 (B) var. *nana* as "*D. barbata*", *Bache Peninsula*, Malte 1927 (O,G) var. *nana* 118901 as "cf. *D. macrocarpa*" and 118904 as "*D. Bellii*"; *South Coast*, *Fram Fiord*, Simmons 1899 (G,N) 1641 1671 var. *nana* as "var. *oblongata*", *Craig Harbour*, Malte 1927 (O) 118900 var. *nana* as "*D. Bellii*", *Polunin* 1934 and 6 typical form and var. *nana*, *Harbour Fiord*, Simmons 1901 (C) 2874 var. *nana* as "var. *glacialis*", *Goose Fiord*, Simmons 1900 and 01 (K,C) var. *gracilescens*, also var. *nana* as "var. *gracilis*" and "var. *oblongata*".

¹ Judging by revision labels I have seen, *D. alpina* var. *gracilescens* is by some considered as synonymous with *D. micropetala* Hook., which may perhaps be a separate species, but which I do not at the moment "understand"—especially as it "runs into" phases of *D. fladnizensis* and *D. alpina*, with the result that the scanty material in herbaria is very variously determined by different specialists.

2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. *Devon Island*, Dundas Harbour, Malte 1927 (O,G) 118897 var. *gracilescens* as "D. alpina x lactea" and 118899 var. *nana* as "D. Bellii", Polunin 1934 and 6 typical form and var. *nana*, Beechy Island, Lyall 1854 (K) apprg. *D. subcapitata*, Borden 1904 (O) 26913 var. *nana* as "D. Bellii f. gracilis potius ad D. macrocarpam", MacMillan 1908 (O) 77274 var. *nana* as "D. Bellii", Soper 1923 (O) 111536 var. *nana* as "D. Bellii", Malte 1927 (O,G) 118894 var. *nana* as "D. Bellii f. an var. svalbardensis", scr. Ekman; "*Cornwallis Island*, Assistance Bay" (Sutherland 1852, II, p. 189, sub nom. *D. glacialis*); *Somerset Island*, Port Leopold, Malte 1927 (O,G) var. *nana* incl. 118903 as "D. macrocarpa f. potius ad D. Bellii" and 118893 as "D. Bellii", also 118902 apprg. *D. subcapitata*.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. *Bylot Island*, Possession Bay, Ross 1818 (B) var. *nana*—type of "*Draba oblongata* R.Br.", Button Point, Wilcox 1928 (O,G) 122043 var. *nana* as "D. Bellii var. glacialis", Tuarpat, Freuchen 1924 (C) 907 as "D. Bellii x lactea vel alpina x Bellii" scr. Ekman, Pond Inlet and near, Mathiassen 1923 (C) 741 ? var. *gracilescens* as "D. Bellii x lactea", Malte 1927 (O,G) 118891 var. *nana* as "D. alpina x lactea", Polunin 1934 and 6 typical form and var. *nana*, Bazin 1935 (M) incl. apprg. *D. subcapitata*, Arctic Bay, Polunin 1936 typical form and var. *nana*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Polunin 1934 and 6 incl. var. *nana* and var. *gracilescens*, "*Cape Searle*" (Taylor 1863, p. 325, sub nom. *D. glacialis*); *Cumberland Gulf*, Taylor 1860 (B, pars) var. *nana* as "D. hirta", Nettilling Lake, Soper 1925 (O,G) incl. 122065 as "D. alpina vel Bellii x fladnizensis—lactea" scr. Ekman and var. *nana* as "D. macrocarpa f. ad D. Bellii", etc.; Camp Kungovik, Soper 1929 (O,G) incl. 122048 as "D. alpina x lactea" and var. *nana* as "D. macrocarpa" scr. Ekman.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. "*Big Island*" (Tarr ex Rowlee and Wiegand 1897, p. 420, sub nom. *D. algida*), ? Bowdoin Harbour, Robinson 1922 (G) 7 28 var. *nana*, Cape Dorset, Soper 1926 (O) 122050 as "D. alpina x daurica" and 122056 as "D. Bellii x daurica vel alpina x daurica" scr. Ekman, Polunin 1934 and 6, incl. 2354 2355 2371 var. *inflatisiliqua*.
6. MELVILLE PENINSULA: c. Neerlo Nakto, Hooper 1822 (L), Parry (B,C) var. *nana* as "D. barbata"; Igloolik, Parry 1823 (K,B,C pars S*) incl. ?var. *nana* as "D. Adamsii", "D. hirta var. 2", and "D. micropetala", Mathiassen 1922 (C) 108 var. *nana* as "D. arctogena f.", Freuchen 1922 (C) 314 var. *nana* as "D. arctogena f. ad groenlandicam". "*Interior*", (Rae 1850, p. 213); Barrow River, Parry (B,C) as "D. pauciflora", etc.; Winter Island, Ross 1821 (K). *Vansittart Island*, Bangsted 1923 (C) 386 var. *nana* as "D. Bellii var. glacialis"; Danish Island, Freuchen 1922 (C) 254 271 282 as "D. arctogena x Bellii" and 18 308 var. *nana*; Georgina Island, Freuchen 1922 (C) 8 202 var. *nana* as "D. Bellii"; Repulse Bay, Olsen 1922 (O) 375 var. *nana* as "D. Bellii" and ? var. *gracilescens*.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. *Chidley Peninsula*, MacGregor 1905 (K, pars) as "D. algida", Burwell, Macoun 1910 (O,G pars with *D. fladnizensis*), Polunin 1931, 4, and 6 incl. var. *nana*, Malte 1933 (O,G) incl. as "D. alpina x daurica", Bowdoin Harbour, Potter 1937 var. *nana*.
8. N. QUEBEC: c. Diana Bay, Knapp 1936 (*in lit.*); ? Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C*), Polunin 1936; 'Hudson Strait', Bell 1884 (B) var. *nana* as "D. stellata var. nivalis"; Sugluk, Polunin 1936; Digges Island, Bell 1884 (B) 169 var. *nana* as "var. glacialis"; Cape Smith, Polunin 1936.

9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. Nottingham Island, Mackenzie 1886 (O) 100765 as "*D. Bellii* var. *glacialis*," Johansen 1927 (C) var. *nana*, Mansel Island, Bell 1884 (O,G,N) incl 1902 var. *nana* as "*D. alpina* var. *glacialis*" (type of *D. Bellii*), Leechman 1936 var. *nana* and var. *gracilescens*; Southampton Island, Borden 1904 (O) 26912 var. *nana*, South Bay, Malte 1928 (O,G) 120621 120647 120649 120653 var. *inflatisiliqua*, Sutton 1930 (G) incl. var. *nana* and var. *inflatisiliqua*, Polunin 1934 and 6 incl. var. *nana* and 108 129 144 163 2279 2282 var. *inflatisiliqua*, Baird 1936 incl. var. *nana*.

(W. COAST HUDSON BAY: ? Whale Point, Freuchen 1923 (C) as "*D. Bellii* x *lactea*" ? apprg. *D. subcapitata*; anon., Marble Island, 1792 (B).)

171. *Draba subcapitata* Simmons, Vasc. Pl. in the Fl. of Ellesmereland, p. 87 (1906).

D. rupestris R. Br. var. *parviflora* Oliver

D. altaica of authors, not (Ledeb.) Bunge

D. Martinsiana of authors

D. micropetala of authors

Besides the typical plant, which grows best in Ellesmere but also persists on calcareous substrata much farther south, there occur in our area various transitional stages (hybrids?) that seem to connect this species with phases of *D. alpina*, *D. fladnizensis*, and perhaps yet others. Gelting (1934, p. 80) especially mentions for East Greenland such forms "transitional to *D. oblongata*", which we have included above in typhus polymorphus *D. alpina*.

General Distribution. Circumpolar; chiefly high-arctic, including the farthest north land-masses. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 237).

E. Arctic Distribution. Probably general in Ellesmere and widespread on Devon Island, but elsewhere only recorded from a few widely separated calcareous areas southwards to Mansel Island in Hudson Bay.

Occurrence. Common in the Far North, rare or very local southwards. Grows chiefly on rather dry clay or gravel ridges or plains with sparse vegetation. Never found by me on any surface that was not composed mainly of limestone or dolomite; hence apparently calcicolous. Flowers and fruits abundantly, growing in close rosettes, which are generally small, even the fruiting axes rarely if ever rising more than 3-4 cm. above the level of the ground.

1. ELLESMERE: c. North Coast, Floeberg Beach and northwards, Feilden (K,B)¹ as "*D. rupestris*"; Cape Richardson, Hansen 1920 (C) *fide* Ostenfeld; Discovery Harbour and near, Hart (G,K,B) as "*D. rupestris*" and "*D. alpina*", Hansen 1920 (C) *fide* Ostenfeld. Hayes Sound, Feilden 1875 (K) as "*D. rupestris*". South Coast, Craig Harbour, Malte 1927 (O,G) incl. 118892 apprg. *D. alpina* as "*D. oblongata* x *subcapitata*", Seidenfaden (1932, p. 12), Polunin 1934 and 6; "Harbour Fiord" (Simmons 1906, p. 91); Musk-ox Fiord, Simmons 1900 (G,C); Goose Fiord, Simmons 1901 (K,C). "West Coast" (Simmons 1906, p. 91).

¹ There is another specimen in Herb. Edinburgh.

2. DEVON, ETC., ISLANDS: f. "North Kent" (Simmons 1909b, pp. 19 and 20). *Devon Island*, "Devils Island, Castle Island, Mount Belcher, Cape Vera, and West Fiord" (Simmons 1909b, pp. 7 *et seq.*); Beechy Island, Lyall 1854 (K,S*) as "*D. micropetala*"; 'Northumberland Sound', Lyall 1853 and 4 (K). *Somerset Island*, Port Kennedy, Walker (K*).
3. N. BAFFIN: r. Arctic Bay, Polunin 1936.
6. MELVILLE PENINSULA: r. *Vansittart Island*, Freuchen 1922 (O,C), *fide* Ekman.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Mansel Island, Leechman 1936. *Southampton Island*, South Bay, Polunin 1936.

172. *Draba fladnizensis* s.l. (Wulfen in Jacquin, Miscel. I, p. 147 (1778)).

D. androsacea Wahlenb.

D. lapponica DC.

D. Wahlenbergii Hartm.

D. rupestris of authors

D. lactea Adams

According to the limits and synonymy given by Professor Fernald (1934c, pp. 286 *et seq.*¹) in his careful revision of "*Draba* in temperate Northeastern America," most of our material of this species would seem to belong to var. *heterotricha* (Lindblom) Ball. *Draba fladnizensis* proves, however, when sufficient material is examined, to be so extremely variable within our area in the type and abundance of its pubescence, that my attempts to separate factions corresponding to the usual varieties and segregate species have proved futile in the presence of a veritable maze of intermediate and other forms. I admit that *Draba lactea* Adams may perhaps, like *D. micropetala* Hook. (See specimen in Herb. Edinburgh, coll. Parry at Igloolik, and cf. above), represent a distinct species, and it is in consideration of such a possibility that I have deviated from my usual policy and cited below all specimens so named, in spite of the fact that *D. lactea* is given as a probable synonym of the species under consideration. Indeed there seemed in our area to be a second, larger and pale yellowish flowered species with the leaves less hairy than in *D. fladnizensis*. But in the first place I did not recognize it early enough for the necessary careful study in the field, and in the second place I am not at all sure that it is separable, at least as a species: so I prefer for the time being to include all under *D. fladnizensis* s.l.

The only form that at the moment seems worth distinguishing in our area is entirely glabrous, and hence well marked:

f. *glabrata* (Lindb.) Polunin in Jour. Bot. LXXVI, p. 99 (1938).

Again, some specimens (e.g., Potter, York Harbour, Frobisher Bay, 1937 No. 8251; Polunin, Lake Harbour, 1936 Nos. 1143 1146 1166 1168, and Craig Harbour, 1936 No. 2484) seem to connect *D. fladnizensis* with *D. nivalis*, and may well represent a hybrid between the two species (cf. Schulz 1927, p. 260). Other phases, again, as has already been mentioned above, appear to be transitional to *D. alpina*; indeed concerning the two species Simmons (1906, p. 85), after studying them in Ellesmere during a 4-year expedition, went so far as to state that "only the colour of the petals gives a distinct character, all others are relative."

¹ In this species much the same "lumping" has been proposed by Lindblom (1839, pp. 45 *et seq.*), Gelert (1898, pp. 302 *et seq.*), and others in Europe.

General Distribution. Circumpolar, all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, 236).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Frequent to common, although generally in small numbers, throughout the area. Grows in rather damp places, especially in mossy areas in marshes and late-snow patches; more rarely on drier clays and gravels. Flowers and fruits abundantly but remains small and rather insignificant, generally 5-10 cm. high when fruiting and less when in flower.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. ? Discovery Harbour, Hart (B,K) as "*D. rupestris*"; *Hayes Sound*, Feilden 1875 (B) as "*D. rupestris*", Craig Harbour, Malte 1927 (O,G) 118907 118913 as "*D. fladnizensis* x *lactea*" and 118905 as "*D. lactea* x *oblongata*" scr. Ekman.
2. DEVON, ETC., ISLANDS: c. *Devon Island*, Dundas Harbour, Malte 1927 (O,G) incl. 118914 as "*D. fladnizensis* x *lactea*" and 118906 as "*D. lactea*," Polunin 1934 and 6; "Cuming Creek" (Borden ex Macoun in Low 1906, p. 320); Powell Creek, Lyall 1852 (K) as "*D. rupestris*"; between Beechy Island and Northumberland Sound, Lyall 1852 (K); 'east side Wellington Channel', Lyall 1852 (K) as "*D. micropetala*". *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T,K) as "*D. glacialis* var." and "*D. rupestris*?". ?"*Somerset Island*, Port Kennedy" (Walker ex Hooker 1861, p. 82).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. *Bylot Island*, Qaersut, Freuchen 1924 (C) 918 as "*D. lactea* var. *pseudo-frigida*", Button Point, Wilcox 1928 (O,G) 122042 as "*D. fladnizensis* x *lactea*", Pond Inlet and near, Borden 1904 (O) as "*D. corymbosa*", Mathiassen 1923 (C) 742 as "*D. lactea*" and 832 as "*D. lactea* var. *pseudo-frigida*", Freuchen 1924 (C) 853 as "*D. lactea*," Malte 1927 (O,G) 118910 *pars* f. *glabrata* as "*D. lactea*" and 118912 as "*D. lactea*," Polunin 1934 and 6 incl. 676 677 737 f. *glabrata*, Arctic Bay, Malte 1927 (O,G) 118908 118909 as "*D. fladnizensis* x *lactea*" and 118911 122230 as "*D. lactea*."
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Polunin 1934 and 6 incl. 646 f. *glabrata*, ? Cape Searle, Taylor 1860 (K) as "*D. rupestris*", "Exeter Sound" (Seidenfaden 1932, p. 13, sub nom. *D. lactea*); *Cumberland Gulf*, Taylor 1860 (K and B *pars*) incl. f. *glabrata* with three other spp. all as "*D. hirta*", Kingnait, Taylor 1860 (K) as "*D. rupestris*"; *Nettilling Lake*, Soper 1925 (O,G) incl. 122060 *pars* f. *glabrata* as "*D. lactea*," 122062 122066 as "*D. lactea*," and 122076 as "*D. lactea* ad *alpinam* vel *Bellii*" scr. Ekman, also 122068 as "*D. nivalis* x *lactea*" det. Ekman, Camp Kungovik, Soper 1929 (O) *fide* Ekman and 122045 *pars* f. *glabrata* as "*D. lactea*" det. Ekman.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. 'north shore of Hudson Strait', Bell (O) 18719 as "*D. lactea*"; *Gordon Bay*, Fox Island, Soper 1926 (O) 122055 as "*D. fladnizensis* x *lactea*", Cape Dorset, Soper 1926 (O) as "*D. lactea*" det. Ekman, Malte 1928 (O,G) 120381 as "*D. fladnizensis* x *lactea*" with duplicate in (C) as "*D. lactea* f.", also 120371 as "*D. lactea* x *nivalis*."
6. MELVILLE PENINSULA: c. Neerlo Nakto, Parry (K) as "*D. hirta* var. 4" and (C) as "*D. hirta* var. 3"; Igloolik, Edwards (B*), Parry 1823 (B,C) as "*D. hirta* var. 1," "*D. hirta* var. 4," "*D. hirta* var. 5," and "*D. fladnizensis* x *Wahlenbergii*". Barrow River, Parry (C*); Repulse Bay, Olsen 1922 (C) 349 as "*D. lactea*". *Vansittart Island*, Bangsted 1923 (C) 436 as "*D. lactea*"; Danish Island, Freuchen 1922 (C) 225 as "*D. lactea*."

7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G); Cape Chidley and near (Bell ex Macoun 1886, p. 488), MacGregor 1905 (K, *pars*) as "*D. algida*" rev. Schulz as "*D. lactea*"; Burwell, Macoun 1910 (O,G *pars*, N,C) 79072, Johansen 1927 (C) 1235b, Malte 1928 and 33 (O,G,N) *fide* Fernald, 120038 120136 as "*D. lactea*" *scr.* Ekman and 120381 as "*D. lactea* x *fladnizensis*", also 120136a as "*D. lactea* x *nivalis*" det. Ekman and 120062 as "*D. lactea* x *rupestris* vel. *nivalis*" *scr.* Ekman, Polunin 1936; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Lady Job Harbour, Potter 1937.
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936; Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; "Eskimo village of Hyla" (Bell ex Macoun 1886, p. 488); opposite Digges Island, Low 1898 (O); Digges Island, Bell 1884 (G,B) 173; Cape Smith, Polunin 1936 incl. 1302 f. *glabrata*.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B*1); Nottingham Island, Bell 1884 (O,G,B) 1907 as "*D. lactea*" *scr.* Ekman, and 1907a as "*D. stellata* var. *nivalis*"; Mansel Island, Bell 1884 (O) 34288, Leechman 1936. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 187, sub nom. *Draba hirta* var. 4); York Bay, Mathiassen 1922 (C) 449 456b as "*D. lactea*"; South Bay, Sutton 1930 (G) incl. *pars* f. *glabrata* and *pars* (with *D. alpina* and *Ranunculus pygmaeus*) as "*Cochlearia groenlandica*", Polunin 1934 and 6 incl. 108 112 123 166 2282 f. *glabrata*; Noksaruak, Baird 1936.
10. W. COAST HUDSON BAY: f. Wager Bay, Macoun 1910 (O,N,C) 79067; Chesterfield, Freuchen 1923 (C) 716 as "*D. lactea*", Polunin 1936; Fullerton, Borden 1904 (O) *fide* Gilg.

173. *Draba crassifolia* Graham in Edin. New Phil. Jour., p. 182 (1829).

This attractive little plant, with us generally only 1-2 cm. high but occasionally reaching 4 cm. when in fruit late in the season, was found in 1936 to be widespread in the eastern half of the extreme south of our area, including in its range the south coast of Baffin, to which it must be noted as new, as indeed it is to the entire Arctic Archipelago. In 1937 it was found again in Baffin—by Professor Potter in Frobisher Bay. It appears to be limited to latish-melting snow patches and to be always perennial in our area (cf. Fernald 1934c, p. 294), although "flowering very promptly"—as it must do in the conditions imposed by the habitat. In the fresh state the flowers of all examples that I have seen are pale yellow, but they quickly fade in the press so as to appear merely cream-coloured or whitish. A possible further range extension to Southampton Island must also be mentioned, although the specimens obtained there are on one hand so far from typical and on the other so very scrappy that I dare not refer them definitely to this species. Perhaps they may represent a hybrid with *D. fladnizensis*, being especially reminiscent of the phase known as *D. lactea*.

General Distribution. North America, transgressing into northwestern Europe. Chiefly subarctic and alpine. Northernmost record Lervig, 74° 11' N. in East Greenland (Gelting 1934, p. 73).

E. Arctic Distribution. Apparently limited to the eastern half of the extreme south, including southern Baffin, with a possible extension to Southampton Island (*See above*).

¹ Specimens mislaid, but those named by the late Mrs. Ekman (cf. 1932, p. 442) as "*D. lactea*" and "*D. fladnizensis* x *micropetala*?" probably belong here (cf. Polunin 1934, p. 204).

Occurrence. Very occasional but gregarious in sheltered ravines and other "late-snow" areas within its limited range, flowering and fruiting abundantly. Never found in any spot that had not a deep drift of snow covering it in winter and melting relatively late in the spring. Owing to this restricted (and often unrecognized) habitat, and to the plant's small size and general insignificance, *Draba crassifolia* has been much overlooked; it may be both more widespread and more plentiful in our area than the present records show. With a few other species it is to be found flowering until late in the summer where the snow lies longest, and in such circumstances cannot possibly function as an annual.

5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 No. 8257. *South Coast*, Lake Harbour, Polunin 1936 No. 2311.
7. N. LABRADOR: o. Burwell, Malte 1928 (O,G) 120092, Polunin 1936; Lady Job Harbour, Potter 1937.
8. N. QUEBEC: r. Wakeham Bay, Polunin 1936 Nos. 1456 1457.
(ISLANDS IN HUDSON, ETC., BAYS: ? *Southampton Island*, South Bay, Polunin 1936.)

174. *Draba nivalis* Liljebl. in K. Vet. Acad. Nya Handl. Stockholm XIV, p. 208 (1793).

D. muricella Wahlenb.

This species stands out among all others of its type by virtue of its dense, whitish covering of minute stellulate hairs, and, consequently, has been left alone, although exhibiting within its form-series variations that elsewhere in the group would by some be considered as constituting separate species. Mrs. Ekman herself (1936, pp. 92-3) admits that there may or may not be cauline leaves; and such other variations as exist seem in most cases either to be quite trivial or to be bound up with local variations in the habitat. Hence they are not considered worthy of enumeration, the species constituting a rather closely conforming series. The plants are small and doubtless often overlooked, being generally less than 10 cm. high when flowering and rarely much exceeding this height when fully mature.

General Distribution. Circumpolar; probably all over the Arctic and Subarctic. Northernmost record Dumbbell Harbour, 82° 28' N. in Ellesmere (Capt. H. W. Feilden 1876—specimen in British Museum).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Fairly common in most places, but never noted as really abundant or important. Grows chiefly in fairly dry and exposed areas, especially where these are manured or otherwise disturbed, but may also occur in a considerable variety of habitats, including rock crevices, gravel plains, and herb slopes.

1. ELLESMERE: c. *Grant Land*, Dumbbell Harbour, Feilden 1876 (B) as "*D. hirta*"; Discovery Harbour, Hart (B) as "*D. cinerea*"; "*Musk-ox Bay*" (Hart 1880, p. 180). *Hayes Sound region*, "*Pim Island and Twin Glacier Valley*" (Simmons 1906, p. 93); Fram Harbour, Simmons 1899 (N,C). *South Coast*, "*Fram Fiord*" (Simmons 1906, p. 93); Craig Harbour, Malte 1927 (O,G), Polunin 1934 and 6; "*Harbour and Goose Fiords*" (Simmons 1906, p. 93).

2. DEVON, ETC., ISLANDS: f? Dundas Harbour, Malte 1927 (O), Polunin 1934 and 6.
3. N. BAFFIN: f. Pond Inlet, Polunin 1934 and 6; Qilalukan, Mathiasen 1923 (C), Freuchen 1924 (O,C); Arctic Bay, Polunin 1936.
4. C. BAFFIN: c. "Scotts Bay" (Taylor 1863, p. 326); Clyde, Polunin 1936; "Kivitung" (Boas ex Ambronn 1890, p. 97); "Cape Searle" (Taylor 1863, p. 326); "Exeter Sound" (Seidenfaden 1932, p. 13). *Cumberland Gulf*, Taylor 1860 (K and B *pars*) with three other spp. all as "*D. hirta*," Kumlien 1878 (G,N) as "*D. stellata* var. *nivalis*"¹ (Giese, Boas ex Ambronn 1890, pp. 80-1); Pangnirtung, Polunin 1934, Turner 1935 (K).
5. S. BAFFIN: c. "Cape Haven" (Schuchert and White ex Holm 1900, p. 66). *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O), Polunin 1934 and 6; "Upper Savage Island" (Bell ex Macoun 1886, p. 448); Cape Dorset, Soper 1926 (O) 122058? as "*D. nivalis* x *rupestris*" scr. Ekman, Polunin 1934 and 6.
6. MELVILLE PENINSULA: c? Fury and Hecla Strait, Parry (B). "*Interior*," (Rae 1850, p. 213 sub nom. *D. stellata*). "*Vansittart Island*, Georgina Island" (Freuchen ex Ekman 1936, p. 93); Repulse Bay, Olsen 1922 (C).
7. N. LABRADOR: f. Cape Chidley, Bell 1884 (O); Burwell, Malte 1928 and 33 (O,G,N), Polunin 1936; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter 1937.
8. N. QUEBEC: c. Cape Wales, Bell 1884 (O); Wakeham Bay, Johansen 1927 (C), Polunin 1936; King George Sound, Bell 1897 (O); Sugluk, Polunin 1936; opposite Digges Island, Low 1898 (O); Wolstenholme, Johansen 1927 (C), Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Nottingham Island, Bell 1884 (O,G,B) 169 *fide* Gilg and Ekman but orig. as "*D. alpina* var. *corymbosa*," Johansen 1927 (C). *Southampton Island*, South Bay, Malte 1928 (O,G), Sutton 1930 (G, *pars*), Polunin 1934 and 6; Walrus Island, Baird 1936.
10. W. COAST HUDSON BAY: c. Whale Point, Comer 1894 (G); Depot Island, Comer 1893 (G); Chesterfield, Malte 1928 (O,G), Polunin 1936; Cape Eskimo and near, Macoun 1910 (O,G), Birket-Smith 1923 (C).

175. *Draba norvegica* Gunn., Fl. Norveg. II, p. 106 (1772).

D. rupestris of authors, possibly including R. Br.

Concerning *D. rupestris* R. Br., Gelert (1898, p. 305) remarks that it "is only a small form of *D. hirta*... about which I have convinced myself by seeing original specimens in the herbarium of the British Museum," and Fernald (1934c, p. 293) says "I am here maintaining *D. rupestris* out of deference to the opinion of European students, although I expect that further study in the field will demonstrate it to be only an extreme phase of *D. norvegica*," and, later (l.c., p. 325), "I anticipate the merging of the two when the latter extreme [*D. rupestris*] has been more collected and studied on our northern barrens and shores." Unfortunately I have not the material to accomplish this merger, much as I would like to, because almost all the specimens labelled "*D. rupestris*" that I have seen belong to quite other species—often, indeed, to quite different groups. For although I have collected and studied extensively on our northern barrens and shores, it appears that almost all specimens of this group that grow there are referable rather to *Draba glabella* or *D. cinerea*, specimens belonging to the *norvegica-rupestris* complex being extremely rare within our area. However, I have seen one that seems to be good *D. norvegica*,

¹ The "*Draba stellata*" reported from Cumberland Gulf by Gray (1879, p. 164) may also belong here—or, more probably, to *D. fladnizensis* s.l.

and, as this is the older name and I cannot satisfactorily separate from it the few scraps of *D. rupestris* that come from within our area, I will include them all under *D. norvegica*. Even then we have only two good and two doubtful records for *D. norvegica*. From these I can say that it appears to flower and fruit abundantly in our area, growing from 3 to 10 cm. high. Our "good" specimens both have hispid siliques and must be referred to

var. **hebecarpa** (Lindbl.) O. E. Schulz in Engler, Das Pflanzenreich 89 (IV, 105), p. 222 (1927).

General Distribution. Sub- to low-arctic and north temperate regions of Europe and eastern North America, including Greenland. Northernmost record doubtful owing to confusion with other species, but *D. rupestris* reaches Nordkapp, 71° 10' N. on the north coast of Scandinavia (cf. Dahl 1934, p. 340), and almost as far north in East Greenland (cf. Seidenfaden and Sørensen 1937, p. 172).

E. Arctic Distribution. Apparently limited to northernmost Labrador in the extreme southeast corner, with possible extensions, based on atypical and very doubtful specimens, to Nottingham Island and the south coast of Baffin.

Occurrence. Apparently very rare, growing on dry and exposed, gravelly areas.

(S. BAFFIN: ? Lake Harbour, Polunin 1934 No. 375.)

7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O) 2028 var. *hebecarpa* as "*D. rupestris*" scr. Fernald (cf. 1934c, p. 293) but rev. Ekman as "*D. rupestris* x *navalis*"; Grenfell Tickle, Potter and Brierly 1934 (G) var. *hebecarpa*. (ISLANDS IN HUDSON, ETC., BAYS: ? Nottingham Island, Bell 1884 (O) 2028 as "*D. rupestris*" but rev. Ekman as "*D. navalis* x *rupestris*.")

176. ***Draba glabella*** Pursh, Fl. Am. Sept. II, p. 434 (1814).

D. daurica DC.

D. arabisans of authors, not Michx.

D. hirta of authors, not L.

Professor M. L. Fernald has recently (1934c, pp. 333 *et seq.*) made a detailed revision of the northeastern American forms of *Draba glabella*, which, he remarks, is in this region "the most variable...species, embracing not only much of the *D. hirta* of authors but many variations which have sometimes been given specific rank and scores of proposed subspecies, varieties and forms." According to the key given in this revision, the following forms are represented in my material; but it must be noted that almost all transitions between these forms can be found, especially where their ranges meet or overlap.

(1) The typical form, the one with narrow siliques and few cauline leaves, which Pursh described, is the most common in our area. It must be noted, however, that most if not all of my material is more hairy than Pursh's type specimen in the British Museum, and hence is not quite typical.

(2) Also with narrow siliques, but this time with 5-8 cauline leaves, is a form which is only fully developed at Churchill and Hebron a little to the south of our area, but which is closely approached by specimens from the Quebec mainland within it, and so must be mentioned. This is var. *orthocarpa* (Fernald and Knowlton) Fernald.

(3) A marked northern extreme with broad siliques is

var. *brachycarpa* (Rupr.) Fernald in *Rhodora* XXXVI, p. 336 (1934).

This occupies nearly all the northernmost stations of the species, being perhaps the only form occurring around the shores of Lancaster Sound, and is also common in southern Baffin and occasional in the extreme north of Quebec, but does not appear to go south of our area (cf. Fernald 1934c, maplet on p. 337).

I have not been able to find this species north of Smith Sound; nor have I seen any "good" specimens in the herbaria except one in Kew Herbarium (Discovery Harbour, Hart) whose growth and narrow siliques suggest that there may be some mistake about the label. *D. glabella* seems to me, as to most recent writers, quite distinct from the next species, and, consequently, I assume it to be absent from Ellesmere and ignore all reports of it from there. Whether such an action is much too drastic, only future exploration can show; but certainly many of the Ellesmere records of "*D. hirta*" should go to the more northerly ranging *D. cinerea*, even if Simmons' "Forms resembling the *D. rupestris* of Rob. Brown," which unfortunately I have not seen, may perhaps come nearer to *D. glabella*.

D. glabella is our largest *Draba* by far, being when in fruit rarely less than 10, generally 15-20, and sometimes more than 30 cm. high. It flowers and fruits abundantly, like all the others.

General Distribution. Circumpolar, widely ranging in latitude, but chiefly subarctic and alpine. Northernmost record Cape Amelie, 77° 32' N. in East Greenland (Sørensen ex Seidenfaden and Sørensen 1937, p. 44).

E. Arctic Distribution. General in the south (except that it has not yet been found in the extreme north of Labrador, although known from nearby as shown by Fernald 1934c, map on p. 334), and widespread to the shores of Lancaster Sound. Not confirmed as occurring in Ellesmere (See above).

Occurrence. Common in the extreme south, but becoming less so northwards and only occasional north of the Arctic Circle. Has a wide range of tolerance to most ecological factors and thus occurs in many different communities, but chiefly in damp places among rocks and luxuriant herbaceous vegetation. However, when it can find them, it grows best of all on patches of open soil around habitations, and on manured areas such as occur by bird-stones and the burrows of rodents.

2. DEVON, ETC., ISLANDS: r. 'East side of Wellington Channel', Lyall 1853 (K) var. *orthocarpa*; Sugluk, Polunin 1936 No. 1535 apprg. var. *orthocarpa*;
3. N. BAFFIN: o. Pond Inlet, Bazin 1935 (O,M), Polunin 1936 var. *brachycarpa*. Admiralty Inlet, Strathcona Sound, Soper 1923 (O,C) 111537 as "*D. arctica*".

4. C. BAFFIN: o. ? Clyde, Polunin 1934. *Cumberland Gulf*, Taylor 1860 (K,B) mixed with three other spp. all as "*D. hirta*", Kumlien 1878 (G,N) var. *brachycarpa* as "*D. hirta*"; Quickstep Harbour, Kumlien (G) var. *brachycarpa* as "*D. hirta*"; Nettilling Lake, Soper 1925 (O,G) 122074 122075, also 122063 122069 as "*D. daurica* var. *rupestriformis*" scr. Ekman.
 5. S. BAFFIN: c. *Frobisher Bay*, Palmer 1929 (P) as "*D. hirta*"; Point Brewster, Potter 1937 incl. 8255 var. *brachycarpa*. *South Coast*, Lake Harbour, Malte 1927, 28, and 33 (O,G) 118916 118917 118918 120292 incl. apprg. var. *brachycarpa*, Knapp 1933, Polunin 1934 and 6 incl. intermediate and var. *brachycarpa*; Amadjuak Bay, Soper 1926 (O) 122073; Cape Dorset, Burwash 1924 (O), Soper 1926 (O,G) 122057 122059 122071, Malte 1928 (O,G) 120396 typical form, 120385 intermed., and 120401 var. *brachycarpa*, Polunin 1934 and 6 incl. apprg. var. *brachycarpa*.
 6. MELVILLE PENINSULA: f? Igloolik, Edwards (B), Parry (B) incl. var. *brachycarpa* as "*D. hirta* var. 1", "*D. hirta* var. 2", and "*D. androsacea*"; Repulse Bay, Hooper 1821 (L) as "*D. androsacea*", Olsen 1922 (C) 374, and 350 as "*D. hirta*" scr. Ostenfeld but rev. Ekman as "*D. cinerea* f. *potius ad D. dauricam*".
 8. N. QUEBEC: c. *Diana Bay*, Knapp 1936; *Payne Bay*, Ney and Courtright 1936; *Wakeham Bay*, Johansen 1927 (K, *pars* with *D. alpina*) 1173, Malte 1927, 28, and 33 (O,G,N) 122023 122029 typical form, and 118919 120198 120243 var. *brachycarpa*, Polunin 1936 incl. 1393 1396 1409 1415 1466 apprg. var. *orthocarpa*; *Sugluk*, Polunin 1936 No. 1535 apprg. var. *orthocarpa*; *Wolstenholme*, Johansen 1927 (C) 1029 as "*D. hirta*", Polunin 1936 incl. var. *brachycarpa*; *Digges Island*, Bell 1884 (O) 1914 as "*D. arabisans*"; *Cape Smith*, Polunin 1936 incl. intermediate and var. *brachycarpa*.
 9. ISLANDS IN HUDSON, ETC., BAYS: f. *Akpatok Island*, Polunin 1931 (B*1). *Southampton Island*, York Bay, Mathiassen 1922 (C) 457; *South Bay*, Malte 1928 (O,G) 120583, Sutton 1930 (G), Manning 1934, Polunin 1934 and 6 incl. apprg. var. *brachycarpa*, Baird 1936.
 10. W. COAST HUDSON BAY: c. *Fullerton*, Macoun 1910 (O,N,C) 79066 as "*D. hirta* var. *leiocarpa*"; *Chesterfield*, Burwash 1924 (O) as "*D. arabisans*", Malte 1928 (O,G) 120440 120470 120474 apprg. var. *brachycarpa*, Gardner 1933 (G), Polunin 1936 incl. apprg. var. *brachycarpa*; *Rankin Inlet*, Macoun 1910 (O) 79074 79075 as "*D. hirta* var. *leiocarpa*"; near *Eskimo Point*, Birket-Smith 1923 (C) 1041.
177. *Draba cinerea* Adams in Mem. Soc. Nat. Mosc. V, p. 103 (1817).
D. arctica J. Vahl
D. hirta L. var. *arctica* (J. Vahl) Watson
D. magellanica Lam. var. *cinerea* (Adams) Ekman

As mentioned above, I am keeping this plant separate from the last species because even if the two "run together" in places they seem in general to be abundantly distinct in the field; moreover this will once again obviate the necessity of making a new combination. Besides the various stages reminiscent of *D. glabella*, which I here place with the present species, and which, I think, include most of the "pubescence" or other forms (cf. Gelting 1934, p. 74) known as *D. Ostenfeldii* Ekman, *D. Ostenfeldii* var. *ovibovina* Ekman, *D. groenlandica* Ekman, and *D. groenlandica* var. *arctogena* Ekman, there are to be found in our area occasional specimens that seem to result from hybridization with *D. nivalis* (e.g., Arctic Bay, Malte, No. 118924, 1927).

Draba cinerea is chiefly a rather high-arctic plant, coming south in our area apparently only in calcareous regions, after the manner of *D. sub-*

¹ Specimens mislaid, but at least the one determined by Mrs. Ekman as "*D. daurica*?" probably belongs to this species.

capitata but considerably farther. The exact significance of the calcicolous habit in these species I do not know, but it may be that they are merely seeking the state of physiological drought and freedom from competition that are outstanding features of most far-northern habitats,¹ and which are simulated farther south most extensively in limestone country. The present species in our area always seems to flower and fruit profusely.

It is rather large and coarse, the mature fruiting axes being generally between 10 and 18 cm. high, although sometimes as little as 6 or as much as 26 cm. The largest specimens usually occur in the Far North, most of those from subarctic and alpine regions being rather small.

General Distribution. ? Circumpolar. Chiefly arctic, including most if not all of the farthest north land-masses. Northernmost record I. P. Koch Fiord, 82° 48' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 236).

E. Arctic Distribution. Fairly general in the Far North, and widespread southwards through Baffin to the islands of Hudson and Ungava Bays.

Occurrence. Local, and generally only rare to occasional. Grows chiefly on rather exposed open clay or gravel plains, but may also occur in manured areas, where, as with most other species, a broad-leaved *forma crassa* (*D. Ostenfeldii*?) is developed. *D. cinerea* appears to be markedly calcicolous, at least in the south, and generally to be snow-free in winter.

1. ELLESMERE: c. in many places (cf. Simmons 1906, p. 94), e.g., *Lady Franklin Bay*, Greely (G) 472, Discovery Harbour, Hart (B,K) as "*D. rupestris*" but then split and rev. Ekman as "*D. groenlandica*" and "*D. groenlandica* var. *arctogena*"; *Hayes Sound region*, Fram Harbour, Simmons 1899 (N,K,C pars) 1092 as "*D. hirta*" split and rev. Ekman as "*D. groenlandica* var. *arctogena*" and "*ad D. groenlandicam*", Skräling Island, Simmons 1899 (C) 1383; *South Coast*, Harbour Fiord, Simmons 1900 (N,K) 2153, also 2546 pars rev. Ekman as "*D. groenlandica* var. *arctogena*", Goose Fiord, Simmons 1901 (C) 2897 as "*D. hirta* f. *canescens*" rev. Ekman as "*D. groenlandica* n. sp. var. *arctogena* n. var.", and 2894? as "*D. hirta*" rev. Ekman as "*D. Ostenfeldii* n. sp."
2. DEVON, ETC., ISLANDS: o. *Devon Island*, 'Wellington Channel', Lyall 1852 (K) apprg. *D. glabella* as "*D. groenlandica*" scr. Ekman; Beechy Island, Lyall 1854 (K).
3. N. BAFFIN: l. Pond Inlet, Polunin 1934; Arctic Bay, Polunin 1936.
5. S. BAFFIN: r. Cape Dorset, Polunin 1936.
6. MELVILLE PENINSULA: o. Igloolik, ?Edwards (B) as "*D. groenlandica*", Parry 1823 (C)³ as "*D. hirta* var. 2" rev. Ekman as "*D. groenlandica* var. *arctogena*". *Vansittart Island*, Danish Island, Freuchen 1922 (C) 226 *fide* Ekman; Repulse Bay, Olsen 1922 (C) 376 *fide* Ekman.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B*⁴). *Southampton Island*, Edwards 1821 (B); South Bay, Malte 1928 (O,G) *fide* Ekman, Sutton 1930 (G) *fide* Fernald, Polunin 1934.
10. W. COAST HUDSON BAY: l. Small island south of Wager Bay, Freuchen 1923 (C) 688 *fide* Ekman; Walrus Island near Cape Fullerton, Freuchen 1922 (C) 333 orig. as "*D. cinerea* var. *arctica*" but rev. Ekman as "*D. groenlandica*"; "Chesterfield" (Gardner 1937, p. 38, sub nom. *D. arctica*).

¹ Cf. Polunin 1939c, pp. 131-2. The truly arctic element of temperate countries consists largely of "open soil" plants—See Polunin 1939d, pp. 352-4.

² Although this plant is labelled "*Draba hirta* Linn. var. *arctica* Watson" in Sereno Watson's own hand, it seems probable that Simmons (1906, p. 95) is right in supposing the "*Draba borealis* DC." reported by Greely (1888, II, p. 12) to belong instead to the present species.

³ There is another specimen in Herb. Edinburgh.

⁴ Specimens unfortunately mislaid, but those reported as this species (Polunin 1934, p. 204) and others named by Mrs. Ekman "*D. groenlandica* E. Ekman or a hybrid (obs. folium caulinum)" probably belong here.

178. *Arabis arenicola* (Richardson) Gelert in Bot. Tidsskr. XXI, p. 289 (1898).

Parrya arenicola Hook.

Sisymbrium humifusum J. Vahl

It is remarkable to see how this plant has been confounded with *Eutrema Edwardsii*, even to the extent that part of the material from which Robert Brown described the latter¹ apparently belonged to *Arabis arenicola* (cf. p. 228), and that this last was originally described by Richardson as a second *Eutrema*. Actually the two are as far apart as their correct position in different genera would suggest, and in the field few pairs of plants stand out as more entirely distinct.

Most of the material of *Arabis arenicola* from within our area is glabrous and so referable to the head form, but that from Chesterfield approaches, and Simmons' from Ellesmere (1906, p. 80) apparently attains,

var. **pubescens** (Wats.) Gelert in Bot. Tidsskr. XXI, p. 290 (1898).

The species flowers and fruits quickly and plentifully in the south and probably also in the north; in marked contrast with the upright axes of *Eutrema Edwardsii*, its inflorescences rarely rise more than a few centimetres above the surface of the soil, but remain only weakly ascending or most often lie procumbent, with fruits trailing on the ground. These axes radiate from a central rosette, and may be anywhere from 5 to 20 or more cm. long. It is a matter of conjecture whether the "*Arabis hispida* Br." reported by Hooker (1825b, p. 188) from the vicinity of Southampton Island belongs to *A. arenicola* var. *pubescens* or to some other species.

General Distribution. North America, extending from East Greenland across the eastern arctic and subarctic regions of the Canadian Archipelago and mainland (to Alaska?)². Northernmost record is from Ellesmere—either that of A. W. Greely at Discovery Harbour, 81° 43' N. (cf. Simmons 1906, p. 80, but *See also* Hopkins 1937, p. 78), or else Beitstad Fiord, 79° 2' N. (Simmons 1906, p. 80).

E. Arctic Distribution. Widespread in the extreme south, including southern Baffin and Southampton Island; also known from Melville Peninsula and central Ellesmere.

Occurrence. Generally rather rare, or at least very local. Grows chiefly on open, sandy or gravelly areas, showing some preference for those that are highly calcareous. I have never found it far from the seashore.

1. ELLESMERE: r. ?"Discovery Harbour" (Greely 1888, II, p. 12). "*Hayes Sound*, Beitstad Fiord, var. *pubescens*" (Simmons 1906, p. 80).
5. S. BAFFIN: o. Lake Harbour, Malte 1927 (O,G,C), Polunin 1934; Cape Dorset, Burwash 1924 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. "Igloolik" (Parry ex Hooker 1825, p. 388, sub nom. *Arabis hispida*); Repulse Bay, Parry (B) as "*Arabis hispida*".

¹ The type sheet in the British Museum is, however, pure *Eutrema Edwardsii*.

² I have already several additions to make to the distribution map given by Hopkins (1937, p. 77), including those cited below and two stations in southwest Greenland.

8. N. QUEBEC: o. Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G,C), Polunin 1934 and 6; opposite Digges Island, Low 1898 (O, *pars*) 34314.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Malte 1928 (O,G,C).
10. W. COAST HUDSON BAY: l. Chesterfield, Tyrrell 1893 (O) 2059 as "*Cochlearia officinalis*", Polunin 1936 No. 2107 apprg. var. *pubescens*.

179. *Arabis alpina* L., Sp. Pl. ed. 1, p. 664 (1753).

This species in our area varies somewhat in the density of its hair-covering. Examples can also differ strikingly in size, some being only 2 or 3 cm. high when flowering and little taller when in fruit, whereas others exceed 20 or even 30 cm. in height when fully mature, having also much larger leaves and other organs. These variations appear to be merely ecological, due to differences in local habitat conditions, and hence to be worthy of no more than casual mention.

General Distribution. ? Circumpolar; chiefly in subarctic and alpine parts of Europe and eastern North America.¹ Northernmost station Magdalena Bay, c. 79° 35' N. in Spitsbergen (Malmgren 1862, p. 238).

E. Arctic Distribution. Fairly general in the insular as well as the eastern mainland regions of the extreme south and persisting through southern Baffin to Cape Searle on the east coast, just north of the Arctic Circle.

Occurrence. Fairly common in the extreme south, rare north of the 65th parallel. Grows chiefly in well-drained but nevertheless damp places, especially where the air is humid near waterfalls and the sides of streams, and on rocky ledges in late-snow areas; also on the open gravelly spots that occur around habitations and are almost universally frequented and manured by sledge-dogs. The largest specimens I have ever seen grew around the Hudson's Bay Company's post at Lake Harbour in southern Baffin. Flowers well and generally matures abundant fruits, but sometimes in late-snow areas it is to be found still in bloom in the autumn.

4. C. BAFFIN: r. Cape Searle, Taylor 1860 (K,B) as "*Arabis hirsuta* ?". "*Cumberland Gulf*" (Kumlien 1879, p. 164).
5. S. BAFFIN: f. *Frobisher Bay*, Sewall 1927 (G); York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1928 and 33 (O,G,N,C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; 'north shore Hudson Strait', Bell 1897 (O); Cannon Inlet, Robinson 1922 (G).
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O,G,N) incl. 1653 (=166) as "*Parrya arctica*"; Burwell, Borden 1904 (O), and eight others (O,G,C,D*); Lady Job Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: o. Diana Bay, Knapp 1936 (*in lit.*2*); Wakeham Bay, Malte 1928 (O,G), Polunin 1936; Sugluk, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Mansel Island, Leechman 1936. *Southampton Island*, (Lyon ex Hooker 1825b, p. 188); Nuwoodlik Hills, Baird 1936; Cape Low, Baird 1936.

¹ In the detailed citations given below there will be found several additions to the distribution map recently given by Hopkins (1937, p. 85).

² Cf. Polunin 1937c, p. 113.

180. *Erysimum Pallasii* (Pursh) Fernald in Rhodora XXVII, p. 171 (1925).

Hesperis Pallasii (Pursh) Seem.

Cheiranthus pygmaeus Adams

Sisymbrium pygmaeum (Adams) Trautv.

This beautiful purple-flowered species seems to be the only high-arctic plant that is at all sweet-scented, and indeed one of the very few that have this added attraction in all the north, where pollination by insects plays a relatively minor part. According to Professor M. L. Fernald, and to Mr. George Rossbach of Harvard, who is monographing the genus *Erysimum* in North America, there can be no doubt that the present species should be referred here. The limited material that I have seen from within our area is mostly of very low stature, the axis being so drastically suppressed that the remarkable (3) 5-10 cm. long siliques appear to radiate in all directions from the surface of a close rosette, almost like a mop of unruly hair. This contracted form has been separated as a subspecies; but as its "characters" are ones that we normally associate merely with passage to a less favourable environment, and as specimens approximating to the typical form are to be found apparently throughout the range of the species, I prefer (as a new combination must be made if we are to recognize this reduced form) to term it

f. **humilum** (Tolmatchew) n. comb.

(*Hesperis Pallasii* subsp. *humilis* Tolmatchew in Sv. Bot. Tidskr. XX, p. 62 (1926).)

This is typically developed at Arctic Bay in northern Baffin, most of my material collected there matching closely some specimens from Novaya Zemlya (leg. Tolmatchew) in the Gray Herbarium. On the other hand some of the Ellesmere material of Simmons and earlier explorers has axes 10-15 cm. (or more ?—cf. Hart 1880, p. 180) tall and belongs to the typical form.

General Distribution. Nearly circumpolar, but apparently absent from northeast Greenland and western Europe (cf. Tolmatchew 1926, map on p. 61). Northernmost record Sommerdalen, 82° 29' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 237).

E. Arctic Distribution. Limited to the northern half, being fairly widespread in Ellesmere and northern Baffin.

Occurrence. Rather rare. Growing on dry open slopes of clay or gravel, generally near the sea. In the only locality where I had the pleasure of finding *Erysimum Pallasii*, ripe seed was set in abundance. The plants all appeared to be perennial, even if some of them died after flowering (cf. Simmons 1906, p. 78).

1. ELLESMERE: o. *Grant Land* [Alert and Discovery Expedition 1875-6, comm. Commander A.A.C. Parr] (B); Discovery Harbour, Hart (G,K), (Greely 1888, II, p. 12); Bellot Island, Feilden (K); "Musk-ox Bay" (Hart 1880, p. 180). *Hayes Sound*, Beitstad Fiord, Simmons 1899 (K,C) 650; "Twin Glacier Valley" (Simmons 1906, p. 78).
3. N. BAFFIN: o. *Bylot Island*, Freuchen 1924 (O,C) 903; *Qaersuarsuit*, Mathiasen 1923 (C); Arctic Bay, Polunin 1936 Nos. 2524 2534 f. *humilum*.

181. *Braya purpurascens* (R. Br.) Bunge apud Ledeb., Fl. Ross. I, p. 195 (1842).

Platypetalum purpurascens R. Br.

This is something of a *typus polymorphus* in our area, showing, besides the typical form, both northern and southern phases whose extremes have been described (and sometimes maintained) as separate species, but which show so many transitions from one to another, and this in so many places, that they cannot I think be so upheld.

(1) The typical form is the usual one in the southern half of our area. It is upright (generally between 4 and 10 cm. high), has the siliques rather short and broad, the raceme aggregated and head-like, and the rosette-leaves entire or essentially so.

(2) In the south of our area, most notably on Southampton Island and less typically around the shores of Hudson Strait, there occurs the somewhat taller plant (up to 20 cm.), with narrower and longer siliques and inflorescence, and the rosette-leaves linear-lanceolate and not infrequently incised towards the tips, which Richardson described as *Braya glabella*. This has by some (e.g., Robinson 1895, p. 140) been considered as an insignificant phase or actual synonym of *B. purpurascens* but by others as belonging to the European *B. alpina* (e.g., Gelert 1898, p. 292), and several recent writers have maintained it as a separate species (e.g., Alm 1921, pp. 247 *et seq.*, and Schulz 1924, p. 230). My own impression is that these two phases are varietally distinct, but I have not seen sufficient material from other parts of the range of the group to be certain; nor do I know the relationship to *B. linearis* Rouy; hence I shall merely cite the taller southern plant with narrow siliques as "cf. *B. glabella*."

(3) In the Far North there occurs a dwarfed plant with characteristically decumbent scapes and subsessile inflorescences, and with short pilose siliques and subsessile stigmas. This I thought at first must be the plant that Ostenfeld named *B. Thorild-Wulffii*, in memory of one who lost his life botanizing in Northern Greenland; but now after seeing authenticated material of Ostenfeld's species I think that it is confined to Greenland. In either case the proper varietal name for our depauperated northern phase is

var. **dubia** (R.Br) O. E. Schulz in Engler, Das Pflanzenreich 86 (IV, 105), p. 235 (1924).

This is perhaps the commonest form in the Far North, on Devon Island and in Ellesmere, but there are to be found almost everywhere specimens that connect it to the typical form.

General Distribution. The whole species circumpolar, chiefly arctic. Northernmost record Floeberg Beach, 82° 27' N. on the north coast of Ellesmere (Moss ex Hart 1880, p. 181, sub. nom. *B. alpina*—also Wolf 1906, specimen in New York Herbarium).

E. Arctic Distribution. Fairly general except in the extreme southwest, where it may, however, have been overlooked.

Occurrence. Common in the north; often absent locally in the south. Grows chiefly in rather dry and exposed, poorly vegetated areas, preferring open plains or solifluction slopes of stiff clay or gravel that are rich in

lime. Indeed in the south it appears to be entirely limited to limestone areas or dumps of transferred material containing limestone fragments. Flowers and fruits abundantly. Is to some extent gregarious, but small and generally quite unimportant as a component of the vegetation.

1. ELLESMERE: c.—about 35 records from some 20 localities (cf. Simmons 1906, p. 79), e.g., *Grant Land*, 82° 27', Wolf 1906 (N) var. *dubia*—orig. as "B. glabella," Discovery Harbour, Hart (G,B) apprg. var. *dubia*—orig. as "B. alpina"; *Grinnell Land*, Hart 1875 (B) as "B. alpina"; *Hayes Sound region*, Bache Peninsula, Malte 1927 (C), Alexandra Haven, Feilden 1875 (B); *South Coast*, Craig Harbour, Malte 1927 (O,C), Polunin 1934 and 6 incl. 842 845 849 850 865 var. *dubia*, Kearney 1935 (O) incl. 118933 var. *dubia*, Harbour Fiord, Simmons 1900 (G,N,B,C) 2388 var. *dubia*, Musk-ox Fiord, Simmons 1900 (C).
2. DEVON, ETC., ISLANDS: f. *Devon Island*, Dundas Harbour, Malte 1927 (O,G) 118930 var. *dubia*, Polunin 1934 and 6 incl. var. *dubia*; Powell Creek, Lyall 1852 (K, pars) as "Eutrema Edwardsii." *Cornwallis Island*, Ede 1851 (T) as "B. glabella"; Assistance Bay, Sutherland 1851 (K*,B) var. *dubia* as "B. glabella." *Somerset Island*, Parry (B), Ross (K*); Port Kennedy, Walker (K*).
3. N. BAFFIN: o. Pond Inlet, Malte 1927 (O), Polunin 1934; Arctic Bay, Polunin 1936 incl. 2530 2542 var. *dubia*; Port Bowen, Parry 1825 (B).
4. C. BAFFIN: r. Nettilling Lake, Soper 1925 (O) *fide* Ostenfeld.
5. S. BAFFIN: r. Lake Harbour, Malte 1928 (O,G), Polunin 1934 and 6 incl. 406 1121 cf. *B. glabella*.
6. MELVILLE PENINSULA: o. "Fury and Hecla Strait" (Parry ex Hooker 1825, p. 387, sub nom. *B. arctica*); Neerlo Nakto, Hooper 1822 (L), Parry (B); Igloodik, Parry (B); Repulse Bay, Olsen 1922 (C). *Vansittart Island*, Danish Island, Freuchen 1922 (C).
7. N. LABRADOR: r. Burwell, Polunin 1934 and 6.
8. N. QUEBEC: r. Wakeham Bay, Malte 1928 (O,G) 120191 as "B. glabella," Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O,G) 2176 as "*Draba aureola*," then "*Parrya arenicola*," and then "*Braya alpina*." *Southampton Island*, South Bay, Malte 1928 (O,G) 120677 as "B. glabella," Sutton 1930 (G), Polunin 1934 and 6 incl. 108 113 115 2275 2286 cf. *B. glabella*, Baird 1936; Coats Island, Porsild 1930 (O*).

182. *Parrya arctica* R.Br. in Suppl. App. Parry's 1st Voyage, p. cclxix (1824).

Except in parts of the Western Arctic and such of our Eastern Arctic islands as Somerset and Cornwallis, which have a "western" affinity, this plant must be exceedingly rare, for in spite of its relative showiness there are very few specimens in the herbaria. I have myself never seen it growing wild and, not knowing *P. nudicaulis* either, will not tamper with its systematics, although my impression is that there is only one arctic species of *Parrya*, even if there may be two varieties.

General Distribution. Central and western arctic America, transgressing into eastern Asia (cf. Hultén 1928, p. 175). Northernmost record Assistance Bay, 74° 40' N. on Cornwallis Island (Sutherland 1851, specimens in Toronto and Kew Herbaria).¹

¹ The old report from Spitsbergen (Parry ex Hooker 1828, p. 209) is most likely erroneous.

E. Arctic Distribution. Limited to the western part of the central region, being recorded from Cornwallis and Somerset Islands, Melville Peninsula, and the adjacent north coast of Southampton Island.

Occurrence. Apparently only rare to occasional within its limited area, except in places on Somerset Island (See Hooker 1826, p. 123). The ecology has not been described, but the indications from collectors' labels are that this species grows chiefly on open areas of calcareous earth, much like *Braya purpurascens* and *Erysimum Pallasii*.

2. DEVON, ETC., ISLANDS: o. *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T,K,B*) as "*Platypetalum purpurascens*". *Somerset Island*, Parry (B), Ross (B); "Port Leopold" (McClintock ex Markham 1909, p. 246).
6. MELVILLE PENINSULA: r. "Repulse Bay" (Parry ex Hooker 1825, p. 388).
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, York Bay, Parry 1821 (B,C).

Besides the specimens cited above there are in the herbaria of the British Museum and Kew Gardens further ones without localities—from Sir J. Ross' last voyage and Sir W. E. Parry's second and third voyages—generally marked "Arctic America."

Droseraceae

In Engler's "Das Pflanzenreich" there is a map purporting to show the range of the genus *Drosera* (cf. Diels 1906) as covering the northern Hudson Bay and Strait region and extending to southern Baffin. This is entirely erroneous, no *Drosera* having ever been found within our area or for a considerable distance to the south. Nor is any to be expected, even if *D. rotundifolia* reaches southwest Greenland and persists considerably farther north in some regions that are climatically still more favourable.

CRASSULACEAE

183. *Sedum roseum* (L.) Scop., Fl. Carniol. ed. 2, I, p. 326 (1772).
S. Rhodiola DC.
Rhodiola rosea L.

The familiar "Roseroot" or "Snowdon Rose" has long been known from the northernmost point of Labrador, which comes just within our area. Here it is indeed very plentiful, attaining according to local conditions anywhere from 3 to 23 cm. in height. However, it had always been reported as absent from the Arctic Archipelago until 1933, when some specimens collected by Dr. M. O. Malte were posthumously distributed as from Lake Harbour on the south coast of Baffin. Reference to the field notebooks left by Dr. Malte made it quite certain, however, that these specimens were collected at Port Burwell in northern Labrador. Nevertheless it was no great surprise, during the expedition of 1936, when new snow so covered the ground that little botanical work could be done, to find living examples of this species potted in the Medical Officer's house at Pangnirtung in Cumberland Gulf.

General Distribution. Nearly circumpolar—extending across Europe and Asia and also occurring in eastern and western North America, but apparently not between. Chiefly subarctic and alpine. Northernmost record Forlandet (Prince Charles Foreland), c. $78^{\circ} 30' N.$ in Spitsbergen (cf. Resvoll-Holmsen 1927, p. 45).

E. Arctic Distribution. Known with certainty only from northern Labrador in the extreme southeast and from Cumberland Gulf in eastern Baffin; the recent report from Diana Bay in the extreme north of Quebec has yet to be fully confirmed (See Polunin 1937c, p. 114).

Occurrence. Common around Port Burwell in the extreme southeast; elsewhere rare or absent. Grows chiefly in rocky places, especially in fissures in cliffs and on broken, rock-strewn ground with little other vegetation. Flowers plentifully, but does not by any means always produce ripe seed.

4. C. BAFFIN: r. *Cumberland Gulf*, Ekaluakdjuin Bay, 1936, plants brought in by Eskimos—a specimen was also sent me the following year by Mr. Trevor Harwood of the Hudson's Bay Company.
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 8722; Burwell, Borden 1904 (O) 26890, and six others (O,G,C,D*); Grenfell Tickle, Potter and Brierly 1934 (G).
(N. QUEBEC: ? Diana Bay, Knapp 1936 in lit.*)

SAXIFRAGACEAE

184. *Saxifraga rivularis* L., Sp. Pl. ed. 1, p. 404 (1753).

One of the most ubiquitous and generally common of arctic plants, the "Alpine Brook Saxifrage," although all the material from within our area belongs to the section *Eurivularis*, yet varies considerably in height, hairiness, and the colour of the petals. On these characters are based several minor forms, which, however, seem doubtfully worth distinguishing. The majority of my specimens from the south and almost all from the north belong to the short-stemmed category, some having the petals white and so being referable to f. *hyperborea* (R.Br.) Hook., whereas others, which frequently grow mixed with them, have the petals reddish purple and belong to f. *purpurascens* Lange. The variations in height seem to be dependent chiefly on local environmental conditions, which in exposed places often cause stunting of the whole plant to less than 1 cm., whereas nearby in sheltered places (particularly when they are manured) the axes may rise to a height of 10 cm. or occasionally more. The plant also tends to be much reduced in size when growing towards the inside of very late-melting snow patches, into which it penetrates sometimes farther than any other angiosperm.

General Distribution. Circumpolar; almost all over the Arctic, and also in subarctic and alpine regions. Northernmost record Alkeneset on Rudolføya, $81^{\circ} 45' N.$ in Franz Josef Land (Hanssen and Lid 1932, p. 21). Below are cited stations at almost the same latitude in Ellesmere, where the species probably goes farther north still.

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Frequent almost everywhere, and in places rather abundant, although so small as to be often overlooked. Grows chiefly in damp areas, particularly among mosses. Its most characteristic habitats are shady ravines and other places among rocks; also the inner zones of late-snow patches; but it is to be found in almost any damp situation, including open and exposed clayey barrens. It flowers and fruits abundantly almost everywhere, and also propagates prolifically by vegetative means (cf. Gelting 1934, p. 129). Markedly calcifugous.

1. ELLESMERE: c. *Lady Franklin Bay*, Discovery Harbour, Greely (G) 2038 as "var. hyperborea"; "Bellot Island" (Moss ex Hart 1880, p. 208). *Hayes Sound region*, c. ten localities (See Simmons 1906, p. 77), incl. Fram Harbour, Simmons 1899 (N,K,C). *South Coast*, Craig Harbour, Polunin 1934 and 6; "Harbour and Goose Fiords" (Simmons 1906, p. 77). "West Coast, Braskerud Plain" (Isachsen ex Simmons 1906, p. 77).
2. DEVON, ETC., ISLANDS: c. *Devon Island*, "West Fiord" (Schei ex Simmons 1909b, p. 7); Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6; Powell Creek, Lyall 1852 (K); 'east side Wellington Channel', Lyall 1852 (K). "Somerset Island", (Walker ex Hooker 1861, p. 83).
3. N. BAFFIN: c. *Bylot Island*, Tuarpat, Freuchen 1924 (O,C); Pond Inlet and near, Soper 1923 (O,C), Mathiassen 1923 (C), Malte 1927 (O,C), Polunin 1934 and 6, Bazin 1935; Arctic Bay, Polunin 1936.
4. C. BAFFIN: c. "Cape Adair and Scotts Bay" (Taylor 1863, p. 328); Clyde, Polunin 1934 and 6; "Cape Searle" (Taylor 1863, p. 328). *Cumberland Gulf* (Taylor 1863, p. 328), Kumlien 1878 (G,N) incl. as "var. hyperborea", (Giese, Boas ex Ambronn 1890, pp. 82 and 97); Kingnait, Taylor 1860 (K*,B*); Pangnirtung, Soper 1924 (O,N), Malte 1927 (O,C), Polunin 1934 and 6, Turner 1934 and 5 (K); Blacklead Island, Soper 1924 (O).
5. S. BAFFIN: c. *Signuia* near Cape Haven, Schuchert and White 1897 (O pars, N); Loks Land, Palmer 1929 (P). *Frobisher Bay*, Point Brewster, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1934 and 6; Upper Savage Island, Parry (B)¹; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 420); Amadjuak, Bell 1897 (O); Fox Island, Soper 1926 (O); Cape Dorset, Polunin 1934 and 6.
6. MELVILLE PENINSULA: c. "Fury and Hecla Strait" (Parry ex Hooker 1825, p. 393); Igloolik, Edwards (B), Parry 1822 and 3 (G,B,C)² as "*Saxifraga hyperborea*". "Interior", (Rae 1850, p. 213); "Duckett Cove" (Parry ex Hooker 1825, p. 393); Gore Bay, Freuchen 1922 (C).
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O); Burwell, Macoun 1910 (O,C), Malte 1928 and 33 (O,G,C) incl. as "*Cochlearia groenlandica*", Porsild 1930 (O*), Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Cape Wales, Bell 1884 (G); Stupart Bay, Payne 1886 (T); Wakeham Bay, Borden 1904 (O,N), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Malte 1928 (O,G), Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Salisbury Island, Buchan 1938; Nottingham Island, Bell 1884 (O), Mackenzie 1886 (O), Johansen 1927 (C). *Southampton Island*, (?Lyon ex Hooker 1825b, p. 190); South Bay, Polunin 1934; Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: c. Fullerton, Borden 1904 (O,G,N), Macoun 1910 (O,G,C)¹; Chesterfield, Freuchen 1923 (N)², Sutton 1930 (G), Polunin 1936; Rankin Inlet, Macoun 1910 (O); near Cape Eskimo, Birket-Smith 1923 (O,C).

¹ Duplicate specimen in Herb. Edinburgh.

² This record was omitted by Grøntved (1936, cf. p. 52).

185. *Saxifraga cernua* L., Sp. Pl. ed. 1, p. 403 (1753).

Like most other members of the genus, this species varies considerably in our area; but in contrast with most others it produces forms that, even if in places they show transitional stages, seem sufficiently marked to be worth enumerating.

(1) The typical form is the usual one occurring throughout our area.

(2) In the mainland regions of the Northwest Territories, which comprise the extreme southwest of our area, many of the plants, for no apparent ecological or other reason, stand out immediately on account of having the leaves more deeply cut, with much narrower and more pointed segments than in the typical form, so that the radical leaves look stellate and the cauline ones more or less flabelliform. The whole plant tends to be yellower when dry, and slenderer than in the type, so far resembling in habit the "western" *Saxifraga exilis* Stephan ex Sternb. that, as it is moreover well marked geographically, I cannot but call it

var. *exilioides* n. var.

Foliis omnibus multo incisioribus quam in forma typica, foliis caulinis incisus saltem ad centrum; segmentis oblongis vel linearibus acutiusculis pro obtusibus vel teretibus. Type in British Museum: *Nicholas Polunin*, Chesterfield, N.W.T., No. 2159, August 20, 1936. This variety occurs up the west coast of Hudson Bay from Cape Eskimo to Fullerton, but appears to be absent from Churchill and other places to the south. It reappears on the other side of Hudson Bay at Wolstenholme, near the northwestern corner of the Province of Quebec.

(3) A form that once appeared to have the geographical delimitation of a true variety, but is now seen to be a mere frondose phase developed almost everywhere (at least in our area) that the species grows in humid places among rocks, is best termed

f. *latibracteata* (Fernald and Weatherby) Polunin in Jour. Bot. LXXVI, p. 100 (1938).

(4) Quite separate from the above, it seems to me (even if it has large leaves persisting up the culms so that one specimen of it was cited by Fernald and Weatherby (1931, p. 235) as their var. *latibracteata*), is a form "bulbillis nigris permultis dense instructis", viz.,

f. *bulbillosa* Engler & Irmsch. in Engler, Das Pflanzenreich 67 (IV, 117), 1, p. 274 (1916).

This is a *forma crassa*, which in our area has been collected on the west coast of Hudson Bay—in the case of Macoun's Fullerton material "in refuse from dog stalls"—and on the closely adjacent Southampton Island. It forms a marked contrast to the slender and graceful var. *exilioides* of the same region.

(5) Also rather rare—and indeed only collected in full development twice in our area—is the peculiar compound

f. *ramosa* Gmel., "Flor. Sibir. IV, p. 162 (1769)"¹.

¹ According to Engler and Irmscher (1916, p. 273), although the combination is not published formally in this place.

General Distribution. Circumpolar; all over the Arctic, also in alpine regions. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 240).

E. Arctic Distribution. Surely complete on ice-free land.

Occurrence. Plentiful everywhere, and one of the chief plants in the Far North. It has a very wide range of tolerance to most environmental conditions, occurring in almost all habitats from wet to very dry and from sheltered to exposed, and doing especially well in manured areas and late-snow patches. It grows anywhere from less than 5 to more than 30 cm. high, being often as big in the Far North as in the south. It frequently flowers far into the summer, but has not been observed to set seed, reproducing instead by means of the numerous reddish bulbils produced in the axils of the cauline leaves and bracts. As already pointed out by Gelting (1934, p. 120), it is highly resistant to frost, which in late-snow patches and in the Far North is liable to catch individuals in any (including the earliest) stage of development and flowering.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. *Grant Land* 82° 30' N., Bartlett 1908 (K) f. *latibracteata*, Floeberg Beach, Feilden (K) incl. f. *latibracteata*, Craig Harbour, Polunin 1934 and 6 incl. f. *latibracteata*.
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. Beechy Island, Soper 1923 (O) incl. 111555 f. *latibracteata*, Malte 1927 (O,G) incl. 118966 f. *latibracteata*.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Polunin 1934 and 6 incl. f. *latibracteata*, Pangnirtung, Polunin 1934 and 6 incl. f. *latibracteata*, Nettiilling Lake, Soper 1925 (O) 125830 f. *latibracteata*, Tredgold 1925 (O) 125822.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. *Frobisher Bay*, Sewall 1927 (G) 294 f. *latibracteata*, Palmer 1929 (P) incl. 642420 f. *ramosa*; *Resolution Island*, Acadia Harbour, Potter 1937 incl. 8088 f. *latibracteata*; *South Coast*, Lake Harbour, Soper 1931 (O) incl. 125789, Knapp 1933 f. *ramosa*, Upper Savage Island, Bell 1884 (O) 8323 orig. as "*Anemone Hepatica*"¹, Amadjuak, Bell 1897 (O) incl. 18736 *pars* with *Saxifraga stellaris* var. *comosa*, Cape Dorset, Soper 1926 (O) incl. f. *latibracteata*, Polunin 1934 and 6 incl. f. *latibracteata*, Tommys Lake, Robinson 1922 (G) as "Scurvy grass, whalers eat it."
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. Burwell, Polunin 1934 and 6 incl. f. *latibracteata*.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Wakeham Bay, Polunin 1936 incl. f. *latibracteata*, Sugluk, Polunin 1936 incl. f. *latibracteata*, Wolstenholme, Polunin 1934 and 6 incl. 2251 var. *axilioides*.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. Akpatok Island, Polunin 1931 (B) incl. f. *latibracteata*; *Southampton Island*, South Bay, Sutton 1930 (G) incl. f. *latibracteata*, Polunin 1934 and 6 incl. f. *latibracteata* and 2273 f. *bulbillosa*, Baird 1936 incl. f. *latibracteata*.

¹ This was also reported by Bell (1884, p. 25DD) from "Ashe's Inlet North Bluff".

10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Fullerton, Macoun 1910 (O.G.C) incl. var. *exilioides* and f. *bulbillosa*¹, Chesterfield, Tyrrell 1893 (O) 8220 var. *exilioides*, Birket-Smith 1922 (C) 569 var. *exilioides*, Freuchen 1923 (C) 709 var. *exilioides*, Polunin 1936 incl. 2131 2136 2149 2159 2165 var. *exilioides*, also f. *latibracteata*, Rankin Inlet, Macoun 1910 (O) 79248 var. *exilioides*, Cape Eskimo, Cope 1934 (I) var. *exilioides*.

186. *Saxifraga caespitosa*² L., Sp. Pl. ed. 1, p. 404 (1753).

S. groenlandica L.

S. decipiens of authors

Muscaria caespitosa (L.) Haw.

This is an atrocious *typus polymorphus*, to whose almost innumerable subspecies, varieties, subvarieties, forms and subforms Engler and Irmscher devote no less than twenty pages of *Das Pflanzenreich*. Within our own area it seems futile—if indeed it is humanly possible—to separate the lower categories; suffice it to say that the material almost all belongs to subsp. *eucaespitosa* Engler & Irmscher, and that much of this—from exposed places in the south and almost everywhere in the north that is not especially well sheltered or manured—belongs to a reduced, often pulvinate phase, which is just worth separating as

f. *uniflora* (R. Br.) Engler & Irmsch. in Engler, *Das Pflanzenreich* 67 (IV, 117), 1, p. 371 (1916).

Very much rarer is the other major category represented in our flora:

subsp. *exaratooides* (Simmons) Engler & Irmsch. in Engler, *Das Pflanzenreich* 67 (IV, 117), 1, p. 375 (1916).

This was first described from a single collection made in southern Ellesmere; since then it has turned up within our area only twice, being collected by Peter Freuchen in 1922 on Walrus Island near Cape Fullerton during the Fifth Thule Expedition with Knud Rasmussen, and recently (1936) by me at Port Burwell in northern Labrador. This last record is somewhat doubtful.

I am quite unable to agree with Dr. Hugh M. Raup in his contention (1936, p. 26) that the Southampton Island plant should be referred to *S. sileniflora* Sternb. Also the report from the adjacent mainland, published last century by Professor Fernald (1898, p. 148) and maintained by Engler and Irmscher as the only other record of this little-known species from outside the Bering Sea region, is based on specimens that I cannot separate from the ordinary run of *S. caespitosa*—nor could the late Prof. Ostenfeld, according to his revision label on a duplicate sheet preserved in the National Herbarium of Canada at Ottawa. Whether or not *S. sileniflora* is a distinct species elsewhere I cannot say, but surely it is not recognizable in the material collected within our area; hence I exclude it from the present flora.

¹ Duplicate specimen in Herb. Edinburgh.

² As with *Deschampsia caespitosa*, it seems best to conform to popular usage and spell the specific name so, even if Linnaeus' original publication had it as "caespitosa" and this is moreover perfectly correct Latin. See footnote on page 104.

General Distribution. Circumpolar; all over the Arctic and Subarctic. Northernmost record Cape Black, 83° 1' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 241).

E. Arctic Distribution. Surely complete on ice-free land.

Occurrence. Frequent to abundant almost everywhere. One of the commonest and hardiest of arctic plants, having such a wide range of tolerance to most environmental conditions that it can grow in almost any habitat. However, it prefers open clayey plains and sandy or gravelly seashores or exposed ridges, being unable to withstand much competition and hence found only sporadically in closed communities. It varies greatly in form and size with local conditions—from a loose stand of branched inflorescences growing 20 or more cm. high in sheltered rocky or manured places to dense cushions bearing a few unifloral axes, sometimes only 2 or 3 cm. high, in unfavourable situations. It flowers and sets ripe seed in abundance, even in the most northerly and exposed habitats.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. Walrus Island, Hart 1875 (K,B) 79 form with most of leaves entire (cf. Simmons 1906, p. 72), Falcon Cliff in Goose Fiord, Simmons 1901 (N,K,B,C) 2870 subsp. *exaratioides* and 3274 "*S. groenlandica* f. *flavescens*."
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. Devils Island (Simmons 1909b, p. 12, "*S. groenlandica* f. *flavescens*").
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Amadjuak, Bell 1897 (B) as "*f. groenlandica*", Bowdoin Harbour, Robinson 1922 (G) 17 as "*S. sileniflora*" but reported by Fernald (1923b, p. 113) as the present sp.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. Cape Chidley, Bell 1884 (O) 34457 as "*var. Sternbergii*" scr. Holm, Burwell, Hantzsch 1906 (D*) as "*S. caespitosa* var. *groenlandica*," Macoun 1910 (O,G,N,C) 29250 as "*S. decipiens* var. *groenlandica*," Polunin 1931, 4, and 6 incl. var. *exaratioides* ?
8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Stupart Bay, Payne 1886 (T) incl. 32 as "*Saxifraga cernua*", Wolstenholme, Low 1898 (O,N) as "*f. groenlandica*", Digges Island, Bell 1884 (O) 34458 as "*var. Sternbergii*" scr. Holm.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. Mansel Island, Bell 1884 (O) incl. 8328 as "*var. Sternbergii*" scr. Holm.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Whale Point, Comer 1893 (O,G) *fide* Ostenfeld 66572—orig. as "*S. sileniflora*", Walrus Island near Cape Fullerton, Freuchen 1922 (O,N,C) 331 var. *exaratioides*, Rankin Inlet, Macoun 1910 (O,G,N,C) 79251 as "*S. decipiens* var. *groenlandica*."

187. *Saxifraga stellaris* L., Sp. Pl. ed. 1, p. 400 (1753).

Although some specimens from Hebron on the coast of Labrador only a little to the south of our area are referable to the typical form, and others from within our area (including one from as far north as Pond Inlet in northern Baffin) closely approach this in having the branches nearly all floriferous, the vast majority of our specimens belong to the usual arctic

var. *comosa* Retzius, Fl. Scand. Prodr., p. 79 (1779).

This has the flowers replaced by an abundance of little bulbils—although two or three of the main branches may still bear terminal flowers and, except in the Far North, there is very often one crowning the central axis. Var. *comosa* also tends to have the axis more erect, rigid, and brittle than in the typical form, and the leaves narrower and toothed only towards the apex, the teeth being, moreover, sharper than in true *S. stellaris*. But these characters are very variable within our area, so that I have felt it best to follow most modern authors in keeping the *comosa* element as a variety, even if some would have it as a separate species. Variable also is the general robustness of the plant, which may bear many thick and much-branched axes up to 30 cm. in height, but more often is limited to a tiny rosette supporting a single very slender unbranched axis only 8 to 10 cm. high.

As they appear to be conspecific, *Saxifraga stellaris* and its var. *comosa* afford yet another example of a principle that we have frequently seen illustrated before, and in very different groups, viz., that species which flower normally in the south tend to take on a vegetative mode of reproduction in the north, thus becoming "adapted to high arctic conditions" (Simmons 1906, p. 69). For in the Far North the short, cool summer is in an average year insufficient for the ripening of seeds except in a few particularly hardy species, with the result that as we go farther north we find more and more plants relying chiefly or wholly on some such vegetative mode of reproduction.

General Distribution. The whole species circumpolar; wide-ranging latitudinally. Var. *comosa* all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 241).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Fairly common almost everywhere, growing chiefly on damp humous soil or among mosses, but often small and overlooked—hence the comparative paucity of records. Rarely absent from any tract of marsh or wet, mossy "late-snow" area. Occurs less frequently on damp open clay plains, where it may, however, grow luxuriantly. All var. *comosa* unless otherwise stated:

1. ELLESMERE: f. "not common...but...probably spread over the whole country" according to Simmons (1906, p. 69), who lists about 16 localities. Only the following specimens have been seen by me: Discovery Harbour, Hart (B)¹; South Coast, Craig Harbour, Polunin 1934, Harbour Fiord, Simmons 1900 (K).
2. DEVON, ETC., ISLANDS: c? "North Kent" (Simmons 1909b, p. 19). Devon Island, "West Fiord" (Schei ex Simmons 1909b, p. 7); Dundas Harbour, Malte 1927 (O,C), Polunin 1934 and 6. Somerset Island, Parry 1825 (B), Ross (B)².
3. N. BAFFIN: c? Pond Inlet, Malte 1927 (O,G,C), Polunin 1934 and 6 incl. 2473 apprg. typical form; Arctic Bay, Malte 1927 (O,G), Polunin 1936; Port Bowen, Parry (B) as "*Saxifraga foliolosa* α *stellaris*".

¹ Reported by Hart (1880, p. 208) as "*S. nivalis* . . . may possibly be a variety of *S. virginensis*".

² Also in Herb. Edinburgh as "*Saxifraga foliolosa*".

4. C. BAFFIN: c. Clyde, Polunin 1934 and 6; "Exeter Sound" (Seidenfaden 1932, p. 14). *Cumberland Gulf*, Taylor 1861 (K) apprg. typical form as "S. stellaris," Kumlien 1878 (G) as "S. stellaris"; Pangnirtung, Malte 1927 (O,G,C), Polunin 1934 and 6; Kekerten Island (Taylor 1863, p. 328), Soper 1924 (O) apprg. typical form.
5. S. BAFFIN: c. Signuia near Cape Haven, Schuchert and White 1897 (O). *Frobisher Bay*, Point Brewster, Potter 1937 incl. 8114 apprg. typical form; York Harbour, Potter 1934. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1936; Amadjuak, Bell 1897 (O, pars with *S. cernua*) 18736; Cape Dorset, Malte 1928 (O,G,C) incl. 120358 as "S. stellaris," Polunin 1934 and 6 incl. apprg. typical form.
6. MELVILLE PENINSULA: c? Edwards (K*), Parry (B*); Neerlo Nakto, Parry (B) as "*Saxifraga foliolosa*"; Igloolik, Parry 1823 (specimen in Herb. Edinburgh) as "*S. propinqua*". "*Interior*," (Rae 1850, p. 213, sub nom. *S. foliolosa*); Duckett Cove, Parry 1822 (C).
7. N. LABRADOR: c. Burwell, Johansen 1927 (C), Malte 1928 and 33 (O,G,C), Polunin 1934 and 6; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Knapp 1936; Wakeham Bay, Johansen 1927 (C), Polunin 1936 incl. 1452 apprg. typical form; Sugluk, Malte 1933 (O), Polunin 1936; Wolstenholme, Johansen 1927 (C), Malte 1928 (O,G,C) incl. 120986 120987 as "*S. comosa*," Polunin 1934 and 6; Digges Island, Bell 1884 (O) 8376 as "*S. nivalis*"; Cape Smith, Polunin 1936 No. 1376 apprg. typical form.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Polunin 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Fullerton, Macoun 1910 (O); Chesterfield, Malte 1928 (O,G) 120440 as "S. stellaris," Polunin 1936 incl. apprg. typical form.

188. *Saxifraga hieracifolia*¹ Waldst. & Kit., Pl. Rar. Hung. I, p. 17 (1802).

This peculiar species, which in far northern Spitsbergen grows taller than almost any other plant, is of limited distribution but some variability in our area. Most individuals are very coarse, with a thick erect axis 25-30 cm. high, but in some cases the axis is much shorter and slenderer and, the leaves being also smaller and rounder, the plant takes on the aspect of *S. nivalis*. Indeed transitions (hybrids?) appear to occur between the two species. *Saxifraga hieracifolia* also varies markedly in the distance between successive nodes of the mature fruiting inflorescence; nevertheless all the material from within our area belongs to "var. *typica* Engler & Irmscher".

General Distribution. Circumpolar, arctic and alpine. Northernmost record Heclahamna in Sorgfjord, c. 79° 55' N. on the north coast of Spitsbergen (Scholander 1934, p. 24).

E. Arctic Distribution. Apparently limited to the central regions, being recorded only from the south coast of Devon Island, the northern half of Baffin, and Melville Peninsula.

Occurrence. Fairly common in northern Baffin, rare in its Devon Island station, and probably not common elsewhere. A striking and con-

¹ This is the original spelling, the common rendering "*hieraciifolia*" being erroneous.
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spicuous plant, of bolt-upright form, growing chiefly in rather damp mossy areas, especially by the banks of streams and in depressions well covered with snow in winter. Flowers plentifully and generally manages to set ripe seed.

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1936 No. 2495.
3. N. BAFFIN: c. Pond Inlet and near, Borden 1904 (O), and six others (O,G,C). *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O); Arctic Bay, Malte 1927 (O), Polunin 1936; Imeq, Mathiasen 1922 (C)¹.
4. C. BAFFIN: r. "South of Scotts Bay" (Taylor 1863, p. 328).
6. MELVILLE PENINSULA: o. Ross (L)?; Neerlo Nakto, Parry (C); Igloodik, Parry 1823 (B,C,S*) as "*Saxifraga plantaginifolia*", Fisher (specimen in Herb. Edinburgh), Angel 1933 (W); Barrow River, Parry (B)² as "*S. plantaginifolia*".

189. *Saxifraga nivalis* L., Sp. Pl. ed. 1, p. 401 (1753).

Micranthes nivalis (L.) Small

This species, as Porsild (1920, p. 92) puts it, "Varies according to the quality of the habitat from the smallest dwarf-forms to robust gigantic specimens". In our area it is represented by three main forms—which seem worth delimiting even if they show all stages of transition between one another.

(1) The typical form is the most frequent. It is rather coarse, growing generally 8-20 cm. high, and occurs almost everywhere. *Micranthes Kumlienii* was described as a new species by Small from within our area, but I am unable to separate it from the present form either on the original diagnosis or on the type material that I have seen, and which clearly belongs to *Saxifraga nivalis*, as it was indeed named and published by Dr. Asa Gray. Its chief distinction lies in the unusually fine dentation of the leaves; but this is a variable character in the group.

(2) Somewhat less numerous than the head form, but nevertheless to be found at almost any point in our area, is the smaller and more slender, few-flowered phase generally known as

var. *tenuis* Wahlenb., Fl. Lapp., p. 114 (1812).

This when fully developed is so strikingly different from the head form, in company with which it frequently grows, that some have advocated its maintenance as a separate species (*Saxifraga stricta* Hornem.). This, however, in the absence of cytological investigation or breeding tests, seems scarcely advisable in view of the facts that all transitions occur and that var. *tenuis* persists alone only in the most unfavourable habitats.

(3) In places in the south of our area there occurs a luxuriant form with the "Panicle loosely corymbiform; the flowers mostly on slender pedicels", viz.,

f. *labradorica* (Fernald) Polunin in Jour. Bot. LXXVII, p. 271 (1939).

(*Saxifraga nivalis* L. var. *labradorica* Fernald in Rhodora XIX, p. 142 (1917).)

¹ The report (Freuchen ex Grøntved 1936, p. 49) from "Near Nyeboes Fiord" is founded on a specimen of *S. nivalis* (q.v.).

² Duplicate in Herb. Edinburgh.

My No. 123 from Akpatok Island, preserved in the British Museum, has on the same plant one axis with the flowers pedicellate and the inflorescence corymbiform, and another axis with the flowers subsessile and hence bunched together as in the typical form. This and other intermediate specimens that I have seen appear to detract greatly from the value of the basic character on which f. *labradorica* was previously given full varietal status (e.g., in Polunin 1938b, p. 100).

General Distribution. Both the typical form and var. *tenuis* circumpolar; all over the Arctic and Subarctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 241).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Common in the northern half and not rare throughout the rest of our area, but never noted as really abundant or important. Grows chiefly in wet places, both in closed marshes or rock ledges and on open patches of damp soil. Also occurs on solifluction slopes and in late-snow areas where the surface may become dry in late summer. It grows most luxuriantly on manured soils around bird-cliffs (especially in seepage-crevices) and Eskimo "middens".

1. ELLESMERE: c. everywhere—numerous records of both the typical form and var. *tenuis*, e.g., in Simmons (1906, p. 68).
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Pond Inlet, Polunin 1934 and 6 incl. var. *tenuis*, Bazin 1935 (O,M) incl. var. *tenuis*, Arctic Bay, Polunin 1936 incl. intermed. and var. *tenuis*, near Nyeboes Fiord, Freuchen 1922 (C) 59 as "*S. hieracifolia*".
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Polunin 1934 and 6 incl. intermed. and var. *tenuis*; Cumberland Gulf, Pangnirtung, Polunin 1934 and 6 incl. var. *tenuis*, 'Quickstep Harbour', Kumlien 1878 (G,N) 993 as "*Micranthes Kumlienii*", Blacklead Island, Soper 1924 (O) var. *tenuis*.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Loks Land, Palmer 1929 (P) incl. var. *tenuis* 642415; Resolution Island, Acadia Harbour, Potter 1937 incl. var. *tenuis*.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G) apprg. var. *tenuis*. Chidley Peninsula (MacGregor ex anon. 1907, p. 80); Cape Chidley, Bell 1884 (O,B) incl. var. *tenuis*; Burwell, Malte 1928 and 33 (O,G,C) incl. var. *tenuis*, Polunin 1931, 4, and 6 incl. var. *tenuis*; Lady Job Harbour, Potter 1937 incl. 8118 *pars* var. *tenuis*; Bowdoin Harbour, Potter and Brierly 1934 (G) var. *tenuis*, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G) var. *tenuis*.
8. N. QUEBEC: c. Diana Bay, Knapp 1936; Stupart Bay, Payne 1886 (T) incl. 34 apprg. var. *tenuis*; Wakeham Bay, Polunin 1936 incl. 1405 apprg. f. *labradorica*; Sugluk, Polunin 1936 incl. var. *tenuis*; Wolstenholme, Johansen 1927 (C), Polunin 1934 and 6 incl. var. *tenuis*, also 2248 intermed. and 1266 f. *labradorica*; opposite Digges Island, Low 1898 (O); Digges Island, Bell 1884 (N) *pars* var. *tenuis*; "Eskimo village of Hyla" (Bell ex Macoun 1886, p. 524); Cape Smith, Polunin 1936 var. *tenuis*.

9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B) incl. var. *tenuis* as "*Saxifraga tenuis*" and 686 f. *labradorica*; Nottingham Island, Bell 1884 (O), *Southampton Island*, Fisher 1821 (B), (?Lyon ex Hooker 1825b, p. 190); South Bay, Malte 1928 (O) 120588 f. *labradorica*, Sutton 1930 (G) incl. var. *tenuis*, Polunin 1934 and 6 incl. var. *tenuis*, also 133 intermed. and 138 f. *labradorica*, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f? Depot Island, Comer (G) f. *labradorica*?; Chesterfield, Tyrrell 1893 (O), Polunin 1936, (Gardner 1937, p. 39).

190. *Saxifraga aizoides* L., Sp. Pl. ed. 1, p. 403 (1753).
Leptasea aizoides (L.) Haw.

Unlike most other members of the genus, and in spite of the fact that Engler and Irmscher (1919, p. 466) introduce it as "*Typus polymorphus S. aizoides*", this species does not appear to vary much in our area, where it grows generally as a loose mat or tuft about 6 (4-10) cm. high, flowering plentifully but not always ripening seed. It seems to be as strongly calciphilous as any species; indeed, having now for several years past made a point of testing the soil around the roots of specimens met in ordinarily acidic country in the north, and having never yet failed to find at least some scraps that would effervesce strongly with HCl, I am inclined to look upon it not merely as an obligate calcicole but as the one species that alone is a sure sign of the presence of CaCO_3 in appreciable quantity, at least in the Arctic.

General Distribution. ? Circumpolar; arctic, subarctic, and alpine. Northernmost record Heclahamna in Sorgfjord, c. $79^\circ 55'$ N. on the north coast of Spitsbergen (Scholander 1934, p. 18).

E. Arctic Distribution. Fairly general in the south, including the southernmost parts of the Arctic Archipelago, but north of the Arctic Circle known only from Igloolik Island off Melville Peninsula, and from Harbour Fiord on the south coast of Ellesmere, from whose northern parts it may well be absent.

Occurrence. Not uncommon in the south; rare or very local north of the Arctic Circle. Sometimes abundant to locally dominant on calcareous substrata, and everywhere limited to soils containing an appreciable amount of CaCO_3 , although a few transported scraps of limestone will suffice (See above). Grows chiefly on damp, open, clayey soils and in marshes, more rarely in open depressions in the heath.

1. ELLESMERE: r. Harbour Fiord, Simmons 1900 and 02 (G,N,K,B,C).
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C), Knapp 1933, Polunin 1934 and 6; 'north shore Hudson Strait', Bell 1897 (O); Cape Dorset, Polunin 1934.
6. MELVILLE PENINSULA: o. Igloolik, Edwards (B), Parry 1823 (B,C)¹. *Vansittart Island*, Danish Island, Freuchen 1922 (O,C).
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O); Burwell, Johansen 1927 (C), Malte 1927 and 8 (O,G,C), Polunin 1934 and 6; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. "Cape Wales" (Bell ex Macoun 1886, p. 525); Wakeham Bay, Johansen 1927 (C), Malte 1927 (O,G), Polunin 1936; "Hyla" (Bell ex Macoun 1886, p. 525); Cape Smith, Malte 1928 (O,G), Polunin 1936.

¹ Duplicate specimen in Herb. Edinburgh.

9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Nottingham Island, Mackenzie 1886 (O); "Mansel Island" (Bell ex Macoun 1886, p. 525). *Southampton Island*, Cape Welsford, Hooper 1821 (L); York Bay, Edwards (B), Parry 1821 (B,C), Mathiassen 1922 (C); South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1936; Noksaruak, Baird 1936.

191. *Saxifraga tricuspidata* Rottb. in Skr. Kjøbenhavnske Selsk. Laerd. Vidensk. X, p. 446 (1770).

Leptasea tricuspidata (Rottb.) Haw.

Almost all of the herbaceous plants that are common throughout the northern parts of our area are circumpolar, but the present species is not known outside of North America (incl. Greenland). Thus Britton and Brown (1913, II, p. 217) are in error when they say that it is "also in Arctic Europe," just as they are when they give the corolla as yellow; for actually in the living plant the petals are white dotted with small spots, of which the lowest are generally yellow but which change through various shades of orange and brown to a deep purple towards the apex (cf. Engler and Irmscher 1919, p. 464, "Inferne luteo-, superne purpureo-punctata").

The vast majority of specimens from our area have the leaves tricuspidate, and so belong to the typical form. Some, however, especially when growing in exposed habitats, have most of their leaves lacking these conspicuous lateral teeth, and a few, from widely separate parts of our area, have all the leaves subentire, and thus belong to what seems best termed

f. *subintegrifolia* (Abrom.) Polunin in Jour. Bot LXXVI, p. 100 (1938).

Apart from this one phase, which simulates the "western" *S. bronchialis* L. but shows dependence on local environmental conditions and no distinct geographical area and hence cannot be upheld as a true variety, *Saxifraga tricuspidata* varies little in our area, except in luxuriance. Thus the axes may sometimes be only 5 cm. high, although generally they rise to double this height and sometimes exceed 15 cm. Such luxuriant specimens growing in the most favourable situations may form extensive mats, especially in the south. As mentioned by Porsild (1920, p. 94), the plant generally looks reddish, but in damp and shaded crevices there occur lengthened green forms, which are usually sterile.

General Distribution. North America, extending from East Greenland across the arctic and subarctic regions of the continent right to Alaska, and coming south on mountains. Northernmost record Floeberg Beach, 82° 27' N. on the north coast of Ellesmere (Feilden ex Hart 1880, p. 208).

E. Arctic Distribution. Probably complete on ice-free land except in the extreme southeast corner, where it has not been found, although it occurs farther south on the coast of Labrador (cf. Abbe 1936, p. 154).

Occurrence. Common almost throughout our area and often abundant, forming vigorous loose mats in suitable situations, and often being of considerable ecological importance. Grows chiefly in poorly vegetated

areas among rocks and on coarse gravel or stony slopes, but may be found almost anywhere that the situation is fairly dry. Also characteristic of exposed cliff-tops as long as there is some moisture, although it apparently needs very little of this. Flowers and fruits plentifully.

1. ELLESMERE: c. everywhere—numerous records from almost all localities.
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. Dundas Harbour, Soper 1923 (O,G) 111568 f. *subintegrifolia*.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. *Bylot Island*, Button Point, Wilcox 1928 (O) incl. apprg. f. *subintegrifolia*, Tulukan, Soper 1923 (O) 111565 apprg. f. *subintegrifolia*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Nettilling Lake, Soper 1924 (O) 125831 apprg. f. *subintegrifolia*.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Lake Harbour, Polunin 1934 and 6 incl. apprg. f. *subintegrifolia*, Bowdoin Harbour, Robinson 1922 (G) 22 apprg. f. *subintegrifolia*, Soper 1926 (O,G) 125966 f. *subintegrifolia*.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities, incl. Point Elizabeth, Bangsted 1922 (C) 98 f. *subintegrifolia*; *Vansittart Island*, Danish Island, Freuchen 1922 (C) 248 f. *subintegrifolia*.
8. N. QUEBEC: c. Diana Bay, Knapp 1936; Cape Wales, Bell 1884 (O,B); Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1936; King George Sound, Bell 1897 (O); Sugluk, Malte 1933 (O,G,N) incl. 126992 apprg. f. *subintegrifolia*, Polunin 1936; Wolstenholme, Johansen 1927 (O), Malte 1928 (O,G,C) incl. 120942 f. *subintegrifolia*, Polunin 1934 and 6; Digges Island, Bell 1884 (O); Cape Smith, Malte 1928 (O) apprg. f. *subintegrifolia*, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B); Salisbury Island, Buchan 1938; Nottingham Island, Bell 1884 (O,G,N,B,C), Mackenzie 1886 (O), Johansen 1927 (C); Mansel Island, Bell 1884 (O). *Southampton Island*, numerous records—cf. Polunin (1938b, p. 100) (O,G, L,C) incl. f. *subintegrifolia*; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Wager Inlet, Macoun 1910 (O) 79238 apprg. f. *subintegrifolia*.

192. ***Saxifraga flagellaris* Willd. ex Sternb., Rev. Saxifrag., p. 25 (1810).**
Leptasea flagellaris (Willd.) Small

This extremely attractive high-arctic and alpine species, known to the old sailors and whalers as "spider plant" on account of its round "body" and long, leg-like "flagellae" subtending daughter individuals, appears in our area to be confined to the northern half. Simmons (1906, p. 63), who has observed it there much more than I, says that it is usually biennial, the mother plant dying after flowering and thus allowing the young rosulae to be loosened during the winter, to flower themselves the following summer. However, quite often the rosulae fail to flower during their first summer of freedom, as I also have seen.¹ Simmons states that the fruits hardly ever ripen in Ellesmere, reproduction and dispersal being mainly by vegetative means, for when the mother plant is dead and "becomes loosened from the ground, . . . the dried flagellae still hold the daughter-individuals bound fast to it, and so it can easily come to pass, that the whole complex is torn up . . . and driven away over the snow in winter time."

¹ Cf. Gelting (1934, p. 122), who considers the species to be "as a rule triennial" in East Greenland.

Although the species as a whole is very variable, I have not been able to find any marked variations within our area. The flowering axes in my material are generally about 5, and never more than 8, cm. high; the specimens all belong to subsp. *euflagellaris* Engler and Irmscher.

General Distribution. Circumpolar; arctic and alpine including all the farthest north land-masses. Northernmost record Cape Benet, 83° 2' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 241).

E. Arctic Distribution. General in ice-free parts of Ellesmere, Devon, Somerset, and adjacent smaller islands, but not found in Baffin or farther south, and only doubtfully recorded from Melville Peninsula.¹

Occurrence. Fairly frequent in the Far North on damp open plains of clay or gravel. Apparently unable to withstand competition and hence absent from closed communities. With regard to pH relationships we have curious contradictions, for whereas Scholander (1934, p. 22) says that it is "Fairly common in North-East Land, except in the pure dolomite areas, where it is almost lacking," Gelting (1934, p. 122) writes "As I have not found the species outside soil rich in lime, I consider it calciphilous." All I can say is that I have myself never found it on soils that were at all highly calcareous, either in Spitsbergen or in Arctic America, but always in rather exposed barren situations where the soil was nevertheless lastingly damp owing to poor drainage or occasionally to feeding from a long-lasting snowdrift.

1. ELLESMERE: c. almost everywhere—numerous records from nearly all parts.
2. DEVON, ETC., ISLANDS: c. "North Kent" (Simmons 1909b, p. 19). *Devon Island*, (McClintock ex Markham 1909, p. 246); "Mount Belcher and Cape Vera" (Simmons 1909b, pp. 8 and 9); "Northumberland Sound" (Lyll ex Hooker 1857, p. 117); Wellington Channel, Lyall (K*); "Caswalls Tower" (McCormick 1884, p. 86); Beechy Island, Lyall 1854 (K,S*); Cape Riley, Pullen (K*). *Cornwallis Island*, Assistance Bay, Sutherland 1851 (T,K). *Somerset Island*, Parry 1825 (K,B,L); Port Leopold, Malte 1927 (O,G,C); Fury Beach, Ross (B), Markham 1873 (K); 'Port Kennedy' (Walker ex Hooker 1861, p. 83)²; Limestone Island, Horner 1875 (K).
(MELVILLE PENINSULA: ? Winter Island, Ross (K)¹.)

193. *Saxifraga Hirculus* L., Sp. Pl. ed. 1, p. 402 (1753).
Leptasea Hirculus (L.) Small

This species exhibits considerable variation in our area, the forms falling into two main classes, which, following the key given by Engler and Irmscher (1916, pp. 110 *et seq.*), belong to

(1) "var. *typica* Hook." having the petals more or less oblong and about three times as long as the sepals. This includes much of the southern material, which varies in height from less than 10 to more than 20 cm. The majority of specimens, except in the most favoured habitats in the

¹ The label reads "Winter Island, Sir J. C. Ross, Reed. v/65", but perhaps Winter Harbour (on Melville Island, where the species is plentiful) was meant instead (cf. Simmons 1913, p. 101). However, a further suggestion that the species may occur on Melville Peninsula is afforded by a specimen in Herb. Edinburgh, whose label states simply that it was collected by Edwards during Parry's second voyage.

² This is fully confirmed by a specimen that I found recently in Herb. Edinburgh.

extreme south, are less than 10 cm. high and so belong to f. *minor* Engl. and Irmsch. (2) an "alpina" series having the petals obovate and scarcely twice as long as the sepals, the extreme phase of which seems worth separating as

var. **propinqua** (R. Br.) Simmons, Vasc. Pl. in the Fl. of Ellesmereland, p. 65 (1906).

This is attained or at least closely approached by all the material from the northern parts of our area and a fair amount of that from the south. However, frequent intermediate specimens show that the two series intergrade freely where their ranges meet or overlap—as is usual with true geographical varieties (subspecies).

General Distribution. Circumpolar; chiefly arctic and alpine. Northernmost record Triodalen in Murchisonfjord, c. 79° 57' N. in the Spitsbergen Archipelago (Scholander 1934, p. 24).

E. Arctic Distribution. Not known from the Labrador section in the extreme southeast corner, but otherwise probably complete on ice-free land as far north as the south coast of Ellesmere. Not found in northern Ellesmere.

Occurrence. Rather common in most places, growing chiefly in swampy areas and mossy tracts in marshes. In such situations its abundant and showy flowers may indeed give a "yellow tinge to the tundra," in the manner described by Feilden (1898, p. 422) for Dolgoi Island and Novaya Zemlya, and as I have also seen in Spitsbergen. Occurs more sparingly on drier areas of open clay.

1. ELLESMERE: 1. South Coast, Fram Fiord, Simmons 1899 (G,N) var. *propinqua*; ?Craig Harbour, Polunin 1934; Harbour Fiord, Simmons 1900 (K,B,C) var. *propinqua*; "Musk-ox and Goose Fiords" (Simmons 1906, p. 66).
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. *Somerset Island*, Port Kennedy, Walker (specimen in Herb. Edinburgh) as "*Saxifraga androsace*".
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Mitimatalik, Mathiassen 1923 (C) 788 var. *propinqua* as "f. minor" scr. Ostenfeld, Freuchen 1924 (C) 934 var. *propinqua* as "f. minor" scr. Ostenfeld.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. ? Ross (L); Neerlo Nakto, Parry 1822 (C); Igloolik, Edwards 1823 (B), Parry 1822 and 3 (K,B,C)¹. "*Interior*", (Rae 1850, p. 214); "Barrow River" (Parry ex Hooker 1825, p. 392); Winter Island, Ross (specimen in Herb. Edinburgh). *Vansittart Island*, Bangsted 1923 (C); Danish Island, Birket-Smith 1922 (C), Freuchen 1922 (C); Repulse Bay, Olsen 1922 (C).
8. N. QUEBEC: c. Diana Bay, Knapp 1936; Wakeham Bay, Johansen 1927 (C), Malte 1927 and 33 (O,G,C), Polunin 1936 typical form; "Hyla" (Bell ex Macoun 1886, p. 524); Sugluk, Polunin 1936 typical form; Digges Island, Bell 1884 (O,C) as "f. alpina" scr. Holm; Mosquito Bay, Low 1898 (O); Cape Smith, Polunin 1936 typical form.

¹ Duplicate seen in Herb. Edinburgh.

9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B) incl. var. *propinqua*; Nottingham Island, Bell 1884 (O,B,C*), Mackenzie 1886 (O) as "f. alpina" scr. Holm, Johansen 1927 (C); Mansel Island, Bell 1884 (O,C) as "f. alpina" scr. Holm. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 190); Cape Welsford, Hooper 1821 (L) as "*Saxifraga propinqua*"; York Bay, Parry 1821 (B,C)¹, Mathiassen 1922 (C) var. *propinqua* fide Ostenfeld; South Bay, Malte 1928 (O,G), Sutton 1930 (G), Polunin 1934 and 6 typical form and var. *propinqua*, Baird 1936; Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Repulse Bay, anon. 1821 (specimen in Herb. Edinburgh); Whale Point, Comer 1894 (G); Chesterfield, Malte 1928 (O,G,C), Sutton 1930 (G), Gardner 1933 (G), Polunin 1936 typical form and var. *propinqua*.

194. *Saxifraga Aizoon* Jacq., Fl. Austr. V, p. 18 (1778).

"Hujus typi polymorphi varietates et formae difficile extricantur" say Engler and Irmscher (1919, p. 489). Fortunately in our area the species, at least so far as I can see from the limited material at my disposal, varies scarcely at all. It belongs to the section (subsp. of Engler and Irmscher) *euaizoon*, var. *montana* Engler and Irmscher.

General Distribution. European, transgressing into eastern North America and penetrating westwards to the Northwest Territories (around Great Slave Lake) and Saskatchewan. Chiefly subarctic and alpine. Northernmost record 74° 30' N. in West Greenland (cf. Porsild 1920, p. 91).

E. Arctic Distribution. Apparently limited to Baffin, where it is widespread, having been found on the south coast, in Cumberland Gulf, and again in the north.

Occurrence. Rare to occasional and very local, growing on rocks and broken slopes in dry, sunny situations. Apparently limited to calcareous areas and always producing the characteristic concretions of CaCO_3 around the margins of the leaves. Flowers rather sparingly, the axes being 5-10 cm. high.

3. N. BAFFIN: r. "Ponds Inlet" (Borden ex Macoun in Low 1906, p. 320).

4. C. BAFFIN: r. *Cumberland Gulf*, Taylor 1860 (K); Kingnait, Taylor 1860 (K,B); "Midliattwack (Milikdjuak) Islands and Niatoling (Niatolik)" (Taylor 1863, p. 328).

5. S. BAFFIN: o. *Frobisher Bay*, north of York Harbour, Potter 1937; Lake Harbour, Malte 1928 (O,G,C), Polunin 1934 and 6; Amadjuak, Bell 1897 (O).

195. *Saxifraga oppositifolia* L., Sp. Pl. ed. 1, p. 402 (1753).

Antiphylla oppositifolia (L.) Fourn.

One of the chief plants of our area. In the first place it is probably the most numerous of all, dominating (if the term can be used when the total vegetation is extremely sparse and largely limited to occasional tufts of this one species) huge tracts of country in the Far North. Then it is probably the hardiest of all phanerogams, at least to cold-rigour, occurring on the most exposed ridges and hill-tops, often where no other vascular plants can grow. All it needs is some sort of a non-lethal substratum

¹ Duplicate specimen in Herb. Edinburgh.

in which to root, in an open space which for a few weeks in an average "summer" will be free from snow and either have the air temperature rising above freezing point most days or have sunshine sufficiently bright to warm its dark foliage by direct or indirect radiation to the point (probably a little below 0° C.—cf. Polunin 1935b) at which vegetative activity can commence.

Saxifraga oppositifolia is almost always the earliest "flower" to appear in spring, although sometimes one or other of the *Salices* will be earlier by a day. Before and after flowering it is among the most squalid-looking of plants, forming untidy brownish mats or tussocks in barren and often dusty situations; when in bloom it must be reckoned among the world's greatest beauties, especially as it stands out in its usually bleak and desolate surroundings. Unfortunately few ever see it at its best, which is surely in the Far North, for it is so quickly over that the vast majority of the ever-increasing band of summer visitors to arctic parts come too late.

Engler and Irmscher (1919, pp. 616 *et seq.*) devote no less than 28 pages to the consideration of the various phases of their "Typus polymorphus *S. oppositifolia*." Most of our material belongs to the usual widespread "subsp. 1. *euoppositifolia* Engl. et Irmsch....var. *a proles typica* Vaccari....subvar. 2. *palaearctica* Engl. et Irmsch.... f. 4 *vulgaris* Engl. et Irmsch." Variations within our area appear to be mere growth-forms dependent on different conditions of the habitat. However, it seems desirable to separate the marked *forma depauperata* with small leaves and shoots, which forms the characteristic close and hard caespites in the most exposed places, and which is of course most prevalent in the Far North, where it also grows in depressions (cf. Simmons 1906, p. 61). To it the same patronymics as were used above may be applied if desired, but the last name is

f. **pulvinata** Andersson and Hesselman in Bih. till K. Sv. Vet.-Akad. Handl. XXVI, 3, p. 24 (1900).

General Distribution. Circumpolar; all over the Arctic and also in alpine regions. It is one of the four plants known from the northernmost botanical locality on earth, viz., Lockwood Island, 83° 24' N. on the north coast of Greenland (Lockwood ex Simmons 1909, p. 65). It was also collected at Cape Columbia, 83° 3' N. in the extreme north of Ellesmere, by Captain Godfred Hansen in 1920 (specimen in Copenhagen Herbarium).

E. Arctic Distribution. Surely complete on ice-free land.

Occurrence. Abundant everywhere, occurring on almost all dry areas. In exposed places, especially in the Far North, it is often the only plant in evidence, characterizing extensive "*Saxifraga oppositifolia* barrens." But except for occasional sprigs, which generally remain in the vegetative state, it is usually absent from marshy and other areas of relatively luxuriant closed vegetation, being unable to withstand competition in spite of its extremely wide range of tolerance to the other main habitat factors. Flowers and fruits very early and abundantly; often rampant and forming

extensive mats, but rarely rising more than a few centimetres above the surface of the soil. Of the leaves, which remain green from one summer to the next, Gelting says (1934, p. 128) "Next after the buds of *Salix arctica* and the leaves of *Dryas*...they form the principal food of the ptarmigan in the winter."

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. f. *pulvinata*.
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. f. *pulvinata*.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. f. *pulvinata*.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. f. *pulvinata*.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. f. *pulvinata*.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities, incl. *Vansittart Island*, Freuchen 1922 (C) 184 as "f. *grandiflora*."
7. N. LABRADOR: c. everywhere—numerous records from almost all localities.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities.

196. ***Chrysosplenium alternifolium* L., Sp. Pl. ed. 1, p. 398 (1753).**

The typical form of the "Golden Saxifrage" appears to be absent from our area and indeed from the whole of eastern North America, all our material belonging instead to the well-marked variety having only four stamens and smaller and more rounded leaves with fewer crenations, viz.,

var. *tetrandrum* Lund, Beretn. om en bot. Reise i Østfinmarken 1842, Bot. Not., p. 41 (1846).

This has by some (e.g., Rose 1897, pp. 274-5) been considered as a separate species, but in view of the occurrence of frequent intermediate forms the usual policy nowadays is to keep it as a geographical variety (subspecies).

The plant in our area, as in East Greenland (cf. Gelting 1934, pp. 117-8), appears to be always nitrophilous, never being found away from the influence of animals of some kind. It occurs chiefly around past or present Eskimo houses, on bird-cliffs, or in lakeside marshes frequented for feeding or breeding purposes by large flocks of wildfowl. These last, like man, probably serve to distribute the species; however, this can hardly be the case on the tops of the bird-cliffs, as guillemots and little auks do not land *above* their nesting ledges, but spend their lives on the water. Perhaps the scavenging and preying glaucous gulls, ravens, snowy owls, peregrine falcons, etc., which are partly responsible for the luxuriance of the vegetation (which often includes *Chrysosplenium*) on the tops of such bird-cliffs (cf. Polunin 1935, p. 176) may help in dispersal, as they often visit deserted settlements to look for morsels, or the burrows of rodents to pounce upon the outgoing and unsuspecting occupants? For the entrance of the burrows of lemmings and ermine must be mentioned as another occasional habitat of small sprigs of *Chrysosplenium*.

In our area the species flowers and fruits abundantly—even in the Far North where it may be only 2-3 cm. high. Farther south it is generally nearer 10 cm. high, and sometimes attains 17 cm.

General Distribution. The whole species circumpolar; very widespread in arctic, boreal, and alpine regions¹. Northernmost record Floraberget, c. 80° 3' N. in Murchisonfjord, North-East Land, Spitsbergen Archipelago (Scholander 1934, p. 17).

E. Arctic Distribution. Fairly general in ice-free areas as far north as the south coast of Ellesmere, but not found north of that.

Occurrence. Generally only rare to occasional. Apparently confined to manured or disturbed areas (See above), growing chiefly around bird-cliffs, human habitations, and the feeding or nesting grounds of geese, eiders, etc. Here, when the substratum is also damp and mossy, *Chrysosplenium* spreads actively by means of long, slender stolons, and in many places forms a luxuriant closed stand. All var. *tetrandrum*:

1. ELLESMERE: r. Harbour Fiord, Simmons 1900 (G,N,K,B,C).
2. DEVON, ETC., ISLANDS: r. *Devon Island*, Dundas Harbour, Polunin 1936; 'Wellington Channel', Lyall 1853 (K). *Somerset Island*, Parry (B) as "*Chrysosplenium alternifolium*," (Ross ex Hooker 1826, p. 125).
3. N. BAFFIN: o. *Bylot Island*, Koroqduaq, Mathiassen 1923 (C); Pond Inlet, Malte 1927 (O,G,C), Polunin 1934 and 6, Bazin 1935 (O,M).
4. C. BAFFIN: f. *Cumberland Gulf*, Taylor 1861 (K) as "*C. alternifolium*"; Pangnirtung, Polunin 1936; Milikdjuak (Midliattwack, Medleatwak) Island, Taylor 1861 (K) as "*C. alternifolium*". *Nettilling Lake*, Soper 1925 (O); Fox Island, Soper 1925 (O, pars) 125652; Camp Kungovik, Soper 1929 (O).
5. S. BAFFIN: o. Lake Harbour, Polunin 1936; Cape Dorset, Malte 1928 (O,G,C) 120349 as "*C. alternifolium*", Polunin 1934 and 6; Cairn Lake, Robinson 1922 (G).
6. MELVILLE PENINSULA: o. Igloolik, Edwards (B), Parry (K,B,C,S*)² as "*C. alternifolium*", ?Ross (L³); Winter Island, Parry (B); Repulse Bay, Olsen 1922 (O).
7. N. LABRADOR: r. Burwell, Malte 1927 (O,G), Polunin 1936.
8. N. QUEBEC: o. Payne Bay, Ney and Courtright 1936; Cape Wales, Bell 1884 (O, pars) 2061; Wakeham Bay, Johansen 1927 (C), Polunin 1936; Sugluk, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B) as "*C. alternifolium*"; Nottingham Island, Johansen 1927 (C). *Southampton Island*, Edwards 1821 (B, note only), (?Lyon ex Hooker 1825b, p. 190, sub nom. *C. alternifolium*); South Bay, Malte 1928 (O,G) incl. 120644 as "*C. alternifolium*", Sutton 1930 (G) as "*C. tetrandrum*", Polunin 1934 and 6, Baird 1936; Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o. Fullerton, Macoun 1910 (O,N) 79231 as "*C. tetrandrum*" and 79247 pars with *Saxifraga cernua*; Chesterfield, Malte 1928 (O,G) 120536 as "*C. alternifolium*", Polunin 1936.

197. ***Parnassia Kotzebuei* Cham. and Schl. in Linnaea I, p. 549 (1826).**

Although it is in places quite frequent, this dainty little species does not appear to have been properly recorded from within our area before, and certainly it is new to Baffin and the entire Arctic Archipelago, where its discovery in 1936 was one of the most pleasant surprises of that year's

¹ The attempt by Nekrassowa (1915, p. 22 and map) to give the "distribution" is entirely unsuccessful.

² There is another specimen in Herb. Edinburgh.

³ Ross' and some of Parry's specimens are without exact data as to the locality, but have (unwarrantably as I think) been cited by Simmons (1913, p. 97) as coming from Igloolik.

expedition. Within our area it is generally around 10 cm. in height in the late flowering or fruiting condition, but varies somewhat in the size and robustness of the leaves—also in the length of the petals, which are said to equal the calyx-lobes but which in some of my otherwise perfectly “good” specimens exceed the calyx-lobes by as much as one-third.

General Distribution. North America; extending across the subarctic and boreal regions of the continent from southern Greenland and Baffin to Alaska. Northernmost record Herschel Island, 69° 34' N. off the coast of the Yukon Territory (J. J. and I. O. Stringer ex Macoun and Holm, 1921, p. 14A).

E. Arctic Distribution. Apparently limited to the eastern half of the extreme south, being general in the mainland region of Quebec and northern Labrador and extending to Lake Harbour on the south coast of Baffin.

Occurrence. Rather common in the mainland regions of Quebec and, locally, in northern Labrador; rare in southern Baffin. Grows chiefly on small patches of earth in damp depressions between larger herbs, or on mossy banks from which water seeps, the area being in most cases deeply drifted over with snow in winter. Appears always to flower and ripen seed plentifully.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936 Nos. 1227 2320 2347.

7. N. LABRADOR: l. Burwell, Malte 1927 (O,C), Porsild 1930 (O*), Polunin 1934 and 6.

8. N. QUEBEC: c. Diana Bay, Knapp 1936;? “Stupart Bay” (Payne ex Lawson 1887, p. 211, sub nom. *Parnassia palustris*); Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1936; Cape Smith, Malte 1928 (O), Polunin 1936.

198. ***Parnassia palustris* L.**, Sp. Pl. ed. 1, p. 273 (1753).

Although I have had some difficulty in distinguishing material collected within or slightly to the south of our area from the familiar European plant described by Linnaeus, it seems best to refer it to the usual eastern and central North American

var. ***neogaea*** Fernald in *Rhodora* XXXIX, p. 311 (1937).

Only one collection belonging to this species has been made within our area. However, it is plentiful only very slightly farther south on both sides of Hudson Bay, and here varies greatly (even in closely contiguous plants within the same stand) in such characters as the size of the petals and the number of setae to each staminodal scale; also in the total height, which may be anywhere from less than 10 to more than 30 cm.

General Distribution. The whole species circumboreal. Widespread in latitude, but not reaching regions that are truly arctic in climate. “Nordgrense på Magerøya 71° 10-11'” N. off the north coast of Scandinavia (Dahl 1934, p. 348).

E. Arctic Distribution. Apparently limited to the extreme southwest corner, being known only from a single collection made at Cape Eskimo on the west coast of Hudson Bay.

Occurrence. Evidently very rare and restricted. Slightly to the south, especially around Churchill, it flourishes on almost any area of damp sand or waterside mud that is open or at least not so luxuriantly vegetated that it will be choked by ranker herbs. It always flowers abundantly. All var. *neogaea*:

10. W. COAST HUDSON BAY: r. Cape Eskimo, Macoun 1910 (O) 79234.

ROSACEAE

199. *Rubus Chamaemorus* L., Sp. Pl. ed. 1, p. 494 (1753).

The familiar circumboreal "Bakeapple" or "Cloudberry" (Norwegian *Multebaer*) is, contrary to previous beliefs and indications in the literature, widespread almost throughout the southern mainland parts of our area. It also occurs on Coats Island in Hudson Bay (as has long been known from Eskimo reports, but has only recently been confirmed by Mr. Porsild), on Walrus Island, which lies between Coats and Southampton Islands, on Upper Savage Islands in Hudson Strait, and, according to a report by C. H. Knapp and Jock Cormack of the Hudson's Bay Company, in Ward Inlet, Frobisher Bay, southeast Baffin. Indeed there can be no reasonable doubt about this last record, as the observers are thoroughly familiar with the species both in the British Isles and in cans, and identified it from fruiting specimens brought in by the Eskimo, who said they had never seen it before and wanted to know whether they dare eat it.¹ The natives also said they were sure the plant had not previously been growing in the valley in which they had seen a few berries the previous year and very many in the current summer (1931). Nor had they ever heard of such a plant from their neighbours living in other parts of southeast Baffin. All I can say here is that Eskimo take in general very little notice of plants—perhaps less than any other primitive race—and that in Greenland although *Rubus Chamaemorus* occurs in several places in the southwest it *does not fruit* on account of the wide territorial segregation of the sexes, the plant being dioecious (cf. Razanova 1928, pp. 315 *et seq.*, and Porsild 1932, p. 66).

At several points in our area *Rubus Chamaemorus* produces fruits plentifully enough, and they are extremely good to eat. The plant varies considerably in robustness, and in the size, texture, shape, and dissection of the leaf. Indeed the leaves are so variable that I thought at first (as is often the case when only a few specimens are available) that some segregation might be desirable; but now after making many more field observations I am convinced that such forms as occur in our area are of no taxonomic significance (cf. Razanova *l.c.*).

General Distribution. Circumboreal. In the New World chiefly sub-arctic and alpine, but reaching truly arctic regions in Eurasia. Northernmost record Isfjord, c. 78° 30' N. in Spitsbergen (Resvoll-Holmsen 1927, p. 48).

E. Arctic Distribution. Widespread in the extreme south, including the southernmost parts of the Arctic Archipelago, but not found north of the 65th parallel.

¹ Presumably because the fruits when ripe bear some resemblance, at least in their dull yellowish colour, to certain fungi—which Eskimo scarcely ever eat, although they will devour practically anything else that can be chewed up and swallowed. The suggestion is that there must be some poisonous species of fungi in the north.

Occurrence. Occasional within its limited area, but gregarious and hence sometimes abundant very locally. Limited to damp, more or less acid situations. With us growing chiefly on mossy or humous hummocks in the deeper sphagnous and other bogs in sheltered valleys, its leaves and axes rising generally only about 5 cm. above the surface, beneath which its roots and runners lie deeply embedded.

5. S. BAFFIN: r. *Frobisher Bay*, head of Ward Inlet, report by Knapp *et al.* (*); Upper Savage Islands, Bell 1884 (O).
8. N. QUEBEC: f. *Diana Bay*, Knapp 1936; *Stupart Bay*, Payne 1886 (T); *Wakeham Bay*, Johansen 1927 (C), Polunin 1936; *King George Sound*, Bell 1897 (O); *Digges Island*, Bell 1884 (O); near *Ice Harbour*, Low 1898 (O).
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, Walrus Island, Baird 1936; *Coats Island*, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o. *Depot Island*, Comer 1893 (G), Birket-Smith 1922 (C), Freuchen 1923 (O,C); *Chesterfield*, Freuchen 1923 (C), Malte 1928 (O,G,C), Polunin 1936; near *Eskimo Point*, Birket-Smith 1923 (C).

Rubus acaulis Michx.

This was reported by Fernald (1925, p. 280) as occurring up to 61° N. in Labrador, but as I have been unable to find any specimen to substantiate this claim, which I have seen repeated elsewhere, I must exclude the plant from the present flora, although it is so plentiful at Hebron, Churchill, and elsewhere only a little to the south of the 60th parallel as to suggest that it may yet be found within our area. Whether or not it is the same as the plant reported as *Rubus arcticus* L. from "Chidley Peninsula" (anon. 1907, p. 79), is impossible to say in the absence of any specimen.

200. *Potentilla Crantzii* (Cr.) Beck (in Sched. ex) Fl. N.-Österr., p. 760 (1892).

- P. maculata* Pourr.
P. alpestris Hall fil.
P. verna L. in part

This species has been collected by numerous visitors to the vicinity of Port Burwell, from Robert Bell ("Crevices of rocks 1884") onwards, being quite common there. Recently it has proved also to be widespread through those parts of northern Quebec that fall within our area. However, in spite of having kept a sharp lookout for it, especially in southern Baffin, I have not (since Akpatok Island, 1931) found it growing anywhere in the Arctic Archipelago, where it appears to be very rare. Thus I can confirm the suspicions of Simmons (1906, p. 59) that the report of "*P. maculata*" from "Grinnell Land" is to be cancelled, for the specimen of Greeley on which it was founded belongs to *P. emarginata* (q. v.). One of Kumlien's specimens from Cumberland Gulf also belongs to the latter species, but not the one in the herbarium of the New York Botanical Gardens.

Within our area *P. Crantzii* grows generally between 10 and 30 cm. high and flowers abundantly. As in East Greenland (cf. Sørensen 1933, p. 60, and Gelting 1934, p. 101), the frequent "transitional forms" that have made the genus such a terror seem not to concern this species.¹ Our

¹ It should, however, be mentioned that some specimens collected in 1936 (Polunin, No. 2628) on an open gravelly space near the ruins of the Moravian Mission House at Burwell are very reminiscent of phases of *P. rubricaulis* (q. v.).

plants are not, however, by any means without variation. Thus they change markedly in robustness and hairiness in the manner already described by Malte (1934, p. 173) for Port Burwell, so that both var. *vulgaris* (Lange) Malte and a "var. *hirta* (Lange) Malte" have been recognized within our area. However, these intergrade so freely (cf. Malte *l.c.*) as to appear to be mere forms, so that, having recently seen in southwest Greenland that var. *hirta* is much more distinct there, I do not take them up for our area. Indeed Lange's original var. *hirta* of *P. maculata*, of which I have seen the type specimen in Herb. Copenhagen (it grew "in locis subhumidis ad radices alium Iglorsoit, sinus Ameralik 1831 Juli, Jens Vahl"), is to my mind quite distinct from the Burwell plant considered by Malte.

General Distribution. ? Europe, Greenland, and eastern North America. Chiefly subarctic and alpine. Northernmost record Kings Bay (Kongsfjord), c. 79° N. in Spitsbergen (Malmgren 1862, p. 244).

E. Arctic Distribution. Fairly general in the mainland regions of northern Quebec and Labrador in the eastern half of the extreme south; also found in the southernmost parts of the Arctic Archipelago, extending northwards to Cumberland Gulf in eastern Baffin.

Occurrence. Common around Port Burwell, occasional in northern Quebec, and very rare elsewhere. Grows chiefly on the most favourable and sheltered slopes where the soil is humous but light, and the snow drifts and lies deeply all winter.

4. C. BAFFIN: r. *Cumberland Gulf*, Kumlien 1878 (N) 1772.

7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K) incl. as "*P. emarginata*"; Cape Chidley, Bell 1884 (O,G) 7309; Burwell, Borden 1904 (O) 62935, and eight others (O,G,C,D*) incl. Malte 1927 and 8 (O,G,C) 120180 as "var. *hirta*" and 121054 121060 as "ad var. *hirtam*," also 119101 120132 as "var. *vulgaris*."

8. N. QUEBEC: o. *Diana Bay*, Knapp 1936; *Payne Bay*, Ney and Courtright 1936; ? *Wakeham Bay*, Johansen 1927 (C*); *Sugluk*, Polunin 1936; ? *Wolstenholme*, Johansen 1927 (C*).

9. ISLANDS IN HUDSON, ETC., BAYS: r. *Akpatok Island*, Polunin 1931 (B); ? *Notttingham Island*, Johansen 1927 (C*).

201. *Potentilla emarginata* Pursh, Fl. Am. Sept. I, p. 353 (1814).

P. nana of authors

For a long time I remained undecided as to how to arrange the material from our area belonging to the present and following four species of this difficult genus. The average specimen would generally sort well enough into one or another of the main groups, which fortunately in each case answers to the description of a fully established species. The trouble, however, comes rather from occasional "odd" specimens that remain over and get variously marked "intermediate," "hybrid," "aberrant," or "forma." From the abundant material that has been collected within our area, and as a result of further searching in the field, I gathered together a considerable number of these "critical" specimens. They constitute as a whole the most complex maze of forms; but when studied and carefully sorted they seem to show transitional stages between almost all the species of the present group.

It would appear that there is almost indiscriminate hybridization between the different species concerned, the offspring being fertile in many, if not in all, cases. Under these circumstances I think it best to take a rather broad view in the delimitation of the species—which then indeed seem perfectly real—and only to mention the more obvious of the intermediate or other *formae*. The present species, *P. emarginata*, may then be said to occur in our area in four main phases:

(1) Except for occasional intermediate plants that show some of the characters of the next form, and still more occasional ones (*See below*) that may actually be referred to it, all the material from the extreme south of our area belongs to the phase described by Pursh (cf. Malte 1934, pp. 176-7), which must be taken as the typical form even if it has been called var. *elatio*r by Abromeit (1899, p. 8) and his followers.

(2) All the material from the northern two-thirds of our area and from as far south as Cumberland Gulf in eastern Baffin differs from the above in its more compact habit, smaller leaves and calyx bracts, and more abundant pubescence, which on the petioles is horizontally spreading instead of irregularly ascending (cf. Malte 1934, pp. 174 *et seq.*). It does not seem to represent a fully distinct species so much as a well-marked northern variety, for which we have to use the rather unfortunate name

var. **typica** Abromeit, Bot. Ergebn. B. Samenpfl., p. 8 (1899).
(*Potentilla fragiformis* of authors; *P. hyparctica* Malte)

(3) In the Far North—chiefly on Ellesmere and Devon Islands, but also occasionally in northern Baffin—there occur tall specimens with coarse multifloral axes which seem transitional to *P. rubricaulis* (q.v.), and which probably represent hybrids between the two species. I have also some specimens that seem to be transitional between *P. emarginata* and other species, including some that may be labelled after the fashion of Gelting (1934, p. 103) "*Potentilla emarginata ad niveam*," as "they unite characters of the two species mentioned, even if they have not been definitely ascertained to be hybrids."

(4) Chiefly in the south, but also as far north as the south coast of Devon Island, are to be found frequent individuals that have the leaves much smoother in texture than in the typical form, and also less dissected, the ultimate lobes being rounded in outline. These plants are generally confined to damp areas in the "snow-patches," the lateness of whose melting prevents them from flowering in an average year. They represent an ecologically determined phase which is paralleled in other species, but is in this case so marked that it requires designation:¹

f. **tardinix** n. forma

Planta habitu laxo, raro florescens. A forma typica differt lobis ultimis foliorum tenuibus, teretibus suborbicularibusque, foliisque necessario glabris vel dumtaxat parce pubescentibus. Type in British Museum, cotype in Fielding Herbarium, Oxford University: *Nicholas Polunin*, Cape Dorset, Baffin Island, No. 242, August 28-9, 1934. Figure on Plate VI.

¹ This form is so striking and characteristic that a well-known authority on the European flora once showed me some specimens of it which he enthusiastically called a "remarkable new species". It took much careful explanation of arctic conditions to persuade him not to describe it as such.

General Distribution. Circumpolar; a characteristic northern species occurring all over the Arctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 239).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Common almost everywhere. Grows chiefly among herbs and grasses on favourable sunny slopes in sheltered areas that are well covered with snow in winter. But it has a very wide amplitude in the moisture and snow-covering scales, and so can occur in many different habitats and communities. Especially characteristic of late-snow areas, in the inner zones of which it develops the peculiar form described above. Conversely, in exposed places it forms very compact tufts, and sometimes even "columns" or "pillars" (cf. Ostenfeld and Lundager 1910, p. 23). Grows anywhere up to 20 cm. in height and generally flowers and fruits abundantly. As with most late-snow plants, specimens are to be found in flower until very late in the summer; moreover, a period of autumn reflorescence may occur in specimens growing in more open places, as has also been noted in some of the *Drabae*.

1. ELLESMERE: c. everywhere—cf. Simmons (1906, p. 58). The following specimens have been seen: *North Coast*, Floeberg Beach, Feilden 1875 (K pars, B) as "*P. nivea* var."; *Lady Franklin Bay*, Greely (G,C?) incl. 62 as "*P. maculata*" scr. Asa Gray, Discovery Harbour, Hart (K) 37 as "*P. nivea*", 'Cape Richardson,' Hansen 1920 (C); *Hayes Sound region*, Feilden 1875 (K,B) as "*P. nivea*," Hart 1875 (K) apprg. *P. rubricaulis*, Cape Rutherford, Simmons 1899 (N,C), Pim Island, Simmons 1899 (C), Cape Sabine, Feilden 1875 (K,B) as "*P. nivea* var."; *South Coast*, Wetherill 1894 (G) apprg. *P. rubricaulis*, Craig Harbour, Jakeman and Fielder 1923 (O), Malte 1927 (O,G,C) 119074 119077 as "*P. groenlandica*," Polunin 1934 incl. 853 862 863 apprg. *P. rubricaulis*, Goose Fiord, Simmons 1901 (G,N pars, K,B,C) incl. apprg. *P. rubricaulis* and 2874 as "*Draba alpina* var. *glacialis*."
2. DEVON, ETC., ISLANDS: c? "Graham and Buckingham Islands" (Schei ex Simmons 1909b, p. 21); "North Kent" (Simmons 1909b, p. 19). *Devon Island*, Dundas Harbour, Soper 1923 (O) 111584 apprg. *P. rubricaulis*, Malte 1927 (O,G,C) 119073 119088 119092, Polunin 1934 and 6 incl. 780c 791 2494 apprg. *P. rubricaulis* and 795 f. *tardinx*.
3. N. BAFFIN: c? *Bylot Island*, Button Point, Wilcox 1928 (O) 125626 apprg. *P. rubricaulis*; Pond Inlet and near, Lyall (K*), Borden 1904 (O) 62938, Mathiassen 1923 (O,C), Freuchen 1924 (O,C), Malte 1927 (O,G,C) 119094 as "*P. groenlandica*," Polunin 1934 and 6 incl. 661 698 apprg. *P. rubricaulis* and 656 677 738 f. *tardinx*, Bazin 1935 (O,M); *Arctic Bay*, Malte 1927 (O) 119098 as "*P. groenlandica*," Polunin 1936.
4. C. BAFFIN: c. Clyde, Malte 1927 (O,G,C) 119075 119106 as "*P. groenlandica*," Polunin 1934 and 6 incl. 610 612 644 f. *tardinx*; Cape Searle, Taylor 1860 (K,B pars with *P. nivea*). *Cumberland Gulf*, Taylor 1862 (K) as "*P. nivea*"; "Kingnait and Niatolik" (Taylor 1863, p. 327)¹; Pangnirtung, Soper 1923 and 4 (O,C), Polunin 1934 and 6 incl. 517 544 f. *tardinx*, Turner 1935 (K); Kekerten Island (Taylor 1863, p. 327), Kumlien (G) as "*P. maculata*" scr. Asa Gray; Blacklead Island, Soper 1924 (O).

All of the above, and specimens cited below from Melville Peninsula, belong to var. *typica*; the remainder, except where otherwise stated, belong to the head form.

¹ The Kingnait report is confirmed by a specimen in Herb. Edinburgh, although this was originally named "*Potentilla nivea*".

5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G,N), Palmer 1929 (P) 642424 as "*P. anserina*," Potter 1937; Loks Land, Palmer 1929 (P) 642423 as "*P. anserina*"; Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Johansen 1927 (C), Malte 1927 and 8 (O,G,B,C) incl. 119102, Knapp 1933, Polunin 1934 and 6 incl. 1182 var. *typica* and 339 f. *tardinx*; Upper Savage Island, Bell 1884 (O); "White Strait" (Tarr ex Rowlee and Wiegand 1897, p. 420, sub nom. *P. nana*); Amadjuak Bay, Soper 1926 (O); Fox Island, Soper 1926 (O); Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Robinson 1922 (G) 55 as "*P. fragiformis*," Burwash 1924 (O), Soper 1926 (O), Malte 1928 (O,G,B), Polunin 1934 and 6 incl. 242 309 f. *tardinx*.
6. MELVILLE PENINSULA: c? Igloolik, Parry (B) as "*P. nivea*". "*Interior*," (Rae 1850, p. 213); Duckett Cove, Parry (C). *Vansittart Island*, Bangsted 1923 (C) 418; Danish Island, Freuchen 1922 (C) 25 *pars* only.
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O); Burwell, Borden 1904 (O) 62936, Hantzsch 1906 (D*), Macoun 1910 (O,G,N,C), Malte 1928 and 33 (O,G,B) incl. 120042 120069, Porsild 1930 (O*), Polunin 1931, 4, and 6 incl. 450 884 f. *tardinx*; Lady Job Harbour, Potter 1937; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Payne Bay, Ney and Courtright 1936; Stupart Bay, Payne 1886 (T) 39 as "*P. maculata*"; Wakeham Bay, Johansen 1927 (C), Malte 1933 (O,G), Polunin 1936 incl. 1384 f. *tardinx*; King George Sound, Bell 1897 (O); "Hyla" (Bell ex Macoun 1886, p. 518); Sugluk, Malte 1933 (O), Polunin 1936; Wolstenholme, Low 1898 (O) 22865, Johansen 1927 (C), Malte 1928 (O,G,B), Polunin 1934 and 6 incl. 195 228 231 f. *tardinx*; Digges Island, Bell 1884 (O,G,B); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O), Johansen 1927 (C) 1087 var. *typica*. *Southampton Island*, South Bay, Polunin 1936 incl. 2290 var. *typica*; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Wager Bay, Macoun 1910 (O,N) 79183 as "*P. nivea* var. *subviridis*"; Chesterfield, Malte 1928 (O,G,B,C) incl. 120525, Polunin 1936 incl. 2145 2146 2157 2164 2166 var. *typica*; near Eskimo Point, Birket-Smith 1923 (C).

202. *Potentilla nivea* s.l. (L., Sp. Pl. ed. 1, p. 499 (1753)).

Like Gelting (1934, p. 104), I have given up trying to subdivide my material belonging to this very complex series. A number of species have been segregated from it by some, or by others have been erected as forms and varieties; but when sufficient material is examined from a wide area they all appear to intergrade so freely that it is in most cases impossible to uphold them as separate on any *group* of characters. Hence, I will follow the great monograph of Wolff (1908, pp. 233 *et seq.*) and "lump" them all under *P. nivea*, admitting that this is merely a "rubbish heap" of forms that have in many cases been put together merely on account of having certain obvious characteristics in common—such as a multifloral axis and white tomentum covering the under side of the leaves. Within this maze of forms, which include apparent hybrids with several other species, I propose to recognize, beyond the typical form, two rather striking if perhaps only artificial categories.

The first of these is the tall and luxuriant phase—often found growing as a *forma crassa* in manured habitats—which has already been recorded

by Malte (1934, p. 172) from Chesterfield and Wakeham Bay within our area, and has since been found at several other points in the western and central parts of the extreme south, viz.,

var. **pallidior** Sw.,¹ Summa Veg. Scand., p. 19 (1814).

Some of the specimens that I have referred here appear to come almost equally near to "*P. emarginata ad niveam*" (See page 275).

The second form is more widespread, occurring (or at least being approached) almost as far north as the species goes. It is characterized by the deeper cutting and narrower lobing of the leaves, which also tend to be 5-parted:

var. **subquinata** Lange, Conspectus Florae Groenlandicae 1, p. 9 (1880).

This is Rydberg's *Potentilla nipharga*, whose greatest claim to our notice is that it is described in "North American Flora" as having the leaflets "hairy and glabrous above." It is also, according to Porsild (1920, p. 99, and cf. Grøntved 1936, p. 55), indistinguishable from var. *pinnatifida* Lehm., which latter name is the older and will have to be adopted if this view is proved correct.

On these characters of leaf size, shape, and hairiness a whole host of forms can be distinguished—but not I think to any advantage in our area.

General Distribution. Circumpolar; chiefly arctic and alpine. Northernmost record Gunnar Andersson Valley, 82° 28' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 239).

E. Arctic Distribution. Fairly general throughout the southern two-thirds of latitude range (except that it has not yet been found in Melville Peninsula), but not authoritatively recorded from north of Lancaster Sound.²

Occurrence. Generally only occasional, growing chiefly in more exposed or at least drier places than the last species, most often on sandy banks or among rocks. Hardly ever at all abundant, except perhaps very locally in manured habitats. Generally conspicuous, flowering and fruiting abundantly, and anywhere from less than 10 to about 40 cm. in height.

(ELLESMERE: ? See above and footnote 2.)

3. N. BAFFIN: r. Arctic Bay, Malte 1927 (O,G,C) incl. apprg. *P. rubricaulis* as "var. *pinnatifida*" and "*P. nipharga*", Polunin 1936.

4. C. BAFFIN: f? "Cape Adair and Scotts Bay"? (Taylor 1863, p. 327); Cape Searle, Taylor 1860 (K,B pars) as "*P. Vahlia*". *Cumberland Gulf* (Taylor 1863, p. 327), Kumlien 1878 (N,K); Pangnirtung, Polunin 1934, Turner 1934 (K); ?"Kekerten, Milikdjuak, Niatolik" (Taylor 1863, p. 327)³; ?Nettilling Lake, Soper 1925 (O) 125796.

¹ According to Porsild (1920, p. 99), this is synonymous with var. *subviridis* Lehm.

² Cf. Simmons (1906, p. 54), who was unable to find the plant anywhere in Ellesmere and, therefore, inclined to discredit all previous records therefrom. The specimens labelled *P. nivea* that I have seen of Greely's and Hart's from the Far North either belong quite obviously to other species or else are too scrappy for certain determination, but such that I would have placed them with *P. rubricaulis*. Perhaps critical study will show that other Far Northern specimens such as Wulff's cited above as the "northernmost record" belong rather to *P. rubricaulis*, in which case the limit is probably reached by true *P. nivea* just below 80° N. in Wijde (Vide) Fiord, Spitsbergen (Polunin 1933, field notes).

³ The report from Milikdjuak (Meed-leak-wack) islands is finally confirmed by a specimen that I recently saw in Herb. Edinburgh, collected by Taylor in 1861.

5. S. BAFFIN: o. *Frobisher Bay*, Point Brewster, Potter 1937; north of York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O,C), Knapp 1933, Polunin 1934 and 6 incl. 441 1224 var. *subquinata*.
7. N. LABRADOR: r. Burwell, Hantzsch 1906 (D*) as "var. *macrophylla*".
8. N. QUEBEC: c. "Cape Wales" (Bell ex Macoun 1886, p. 518); Stupart Bay, Payne 1886 (T); Wakeham Bay, Malte 1927, 28, and 33 (O,G,N,C) incl. 126918 as "var. *maculata*", also var. *pallidior*, Polunin 1936 incl. 1402 1407 var. *pallidior* and 1395 1403 var. *subquinata*; Sugluk, Polunin 1936 incl. 1501 var. *pallidior*; Wolstenholme, Polunin 1936; Digges Island, Bell 1884 (G); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Sutton 1930 (G) var. *subquinata*, Manning 1934, Polunin 1934 and 6 incl. 1118 var. *pallidior*.
10. W. COAST HUDSON BAY: o. ?Fullerton, Macoun 1910 (N) 79193 as "*P. bipinnatifida* var. *platiloba*" scr. Rydberg; Chesterfield, Malte 1928 (O,G,C) var. *pallidior* incl. as "var. *pinnatifida*", Polunin 1936 incl. 2234 var. *pallidior* and 2110 2125 2143 2145 2235 var. *subquinata*, (Gardner 1937, p. 39); Cape Eskimo, Macoun 1910 (O,N,C*) incl. as "var. *pinnatifida*" and 79182 as "*P. nipharga*" scr. Rydberg, (Gardiner 1937, p. 39).

203. **Potentilla rubricaulis** Lehm. in Nov. et minus cogn. Stirp. Pugillus II, p. 11 (1830).

P. Pedersenii of authors

I am taking the side of experienced field students and following Simmons (1906, pp. 50 *et seq.*) and the recent writers on the flora of East Greenland in using this name for the present species; it is at least preferable to the ill-defined and often confused *P. Pedersenii* (Rydb.) Rydb. (cf. Sørensen 1933, pp. 64-72). Nevertheless a review of the extensive literature connected with the question (cf. also Ostenfeld 1923, pp. 182 *et seq.*) leaves me undecided as to what varietal name, if any, should be used for our plant. So, in the absence of any fully authenticated specimen of Lehmann's species, I must simply refer our material unqualifiedly and somewhat provisionally to "*P. rubricaulis*."

Mention has already been made above of specimens apparently intermediate between *P. emarginata* and the present species; others seem to connect the latter to *P. nivea*, or, in one case, to *P. pulchella*, whereas others again to a considerable degree combine the characters of *P. rubricaulis* and *P. Vahlia*na, to which, it is worthy of note, Wolff (1908, p. 239) referred the type specimen of *P. Pedersenii*. To me *P. rubricaulis* (or at least the material that I am referring to it) has always seemed to be still more closely related to *P. nivea*, and indeed to take its place in the Far North.

General Distribution. ? Arctic and subarctic America, stretching from Greenland and the northern parts of the Arctic Archipelago to the Mackenzie Delta, and perhaps farther south in the Rocky Mountains. Northernmost record I. P. Koch Fiord, 82° 48' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 240, sub nom. *P. Pedersenii*).

E. Arctic Distribution. General in ice-free parts of Ellesmere and also occurring in Devon Island and northwest Baffin, but, with the possible exception of a plant from Melville Peninsula which I have not seen, no typical material has been collected anywhere in the southern half of our area.

Occurrence. Except in northern Baffin where it is rare, the species is fairly frequent within its limited range. It grows chiefly on open gravel or clay plains, but also on herb-slopes and manured areas, where it may be quite rank and luxuriant. Some of the biggest specimens come from very far north; they exceed 20 cm. in height and flower and fruit abundantly, as indeed do all our Eastern Arctic *Potentillas*.

1. ELLESMERE: c. *Lady Franklin Bay*, Greely (G) as "*P. nivea*" rev. Rydberg as "*P. villosa*"; Discovery Harbour, Hart 1875 (K,B *pars* with *P. pulchella*)¹. *Hayes Sound region*, Bache Peninsula, Malte 1927 (O,G,C) 119082 119087 119096; "*Beitstad Fiord and Skräling Island*" (Simmons 1906, p. 53, sub nom. var. *arctica*); Fram Harbour, Simmons 1899 (C) 1085 1880 as "var. *arctica*"; *South Coast*, Fram Fiord, Simmons 1899 (G,C) 1630 as "var. *arctica*"; Harbour Fiord, Simmons 1900 (N,K,B,C) 2151 2650 as "var. *arctica*"; Goose Fiord, Simmons 1901 (C) 3771 as "var. *arctica*."
2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Malte 1927 (O,G) 119097, and 119091 ? apprg. *P. pulchella* as "*P. groenlandica* x *pulchella*", Polunin 1936; Cape Riley, Pullen (K*).
3. N. BAFFIN: r. Arctic Bay, Malte 1927 (O,G,C) 119078 119089, Polunin 1936 incl. 2565 apprg. *P. Vahlia*na.
(MELVILLE PENINSULA: ? Barrow River, Parry (K*).

204. *Potentilla Vahlia*na Lehm., Monogr. Pot., p. 172 (1820).

Almost as much with this as with *P. nivea* is it necessary to take a very wide view of the specific limitations if one is to avoid having to describe almost endless variants. Thus, besides a series of forms developed in relation to habitat differences, there are all sorts of variations which may or may not be coupled with genes transferred from other species, and rather plentiful "intermediates" which show a more or less complete line of transition to these other species—particularly to *P. rubricaulis* and *P. pulchella*, so that it is difficult to decide where the limits of one species end and those of the next begin. Finally, there are rather remarkable variations in the width of the calyx-bracts exhibited by plants from different places; but even if this character has been used by some authors it seems to be a very poor one in the group. Moreover, I am not at all sure about the relation to *P. rubricaulis* and *P. nivea* var. *subquinata* of much of the northern material that has long and narrow calyx-bracts, and so, as the abundant material collected in 1936 indicates the continuity (rather than emphasizes any differences) between the various categories, I have little hesitation about "lumping" them all under the same name. The group needs further critical study in the field at all stages, which is not so easy to do in high-arctic latitudes, but without which no further categories should be erected where already too many species have been proposed.

*Potentilla Vahlia*na is æsthetically one of the most attractive of all true arctic plants, with its large, pale yellow flowers and silky leaves. It shows a tendency in exposed places to form dense "pillars" of very closely packed, withered leaves persisting around the axis.

¹ Another specimen of Hart's from here, in Herb. Edinburgh, appears to result from hybridization with *P. pulchella* (q.v.).

General Distribution. ? North America; stretching from northwest Greenland and the Arctic Archipelago to the Rocky Mountains and Alaska. (There is also a specimen in the Gray Herbarium (sub nom. *P. nivea*) collected on Arakamtchatchene Island by C. Wright during the U.S. North Pacific Exploring Expedition, 1853-6.) Chiefly arctic. Northernmost record Discovery Harbour, 81° 43' N. in Ellesmere (Hart ex Simmons 1906, p. 56).

E. Arctic Distribution. Widespread almost throughout, but sporadic in appearance; thus it is lacking in parts of Ellesmere (cf. Simmons 1906, p. 56) and has not yet been found on Devon or the adjacent smaller islands, or in considerable tracts of country bordering on Hudson Strait.

Occurrence. Usually no more than occasional, and often entirely absent locally. Grows chiefly in rather dry and exposed, open, gravelly or sandy areas. Less frequent in closed grassy vegetation, where it tends to become so much less densely caespitose as to be scarcely recognizable. Flowers and fruits quickly and plentifully; generally between 5 and 12 cm. high.

1. ELLESMERE: l. "Discovery Harbour" (Hart ex Simmons 1906, p. 56). *South Coast*, Craig Harbour, Polunin 1934; Goose Fiord, Simmons (O,G,N,K,B,C).
3. N. BAFFIN: o. Pond Inlet and near, Malte 1927 (O), Bazin 1935 (M); Arctic Bay, Malte 1927 (O,G,C) 119076 119083 119085 119086 119103 119104 as "*P. Pedersenii*," Polunin 1936; Gifford Fiord, Mathiassen 1922 (C); near Cape Hallowell, Freuchen 1922 (C).
4. C. BAFFIN: f. "Scotts Bay" (Taylor 1863, p. 327); ?"Kivitung" (Boas ex Ambronn 1890, p. 97); Cape Searle, Taylor 1858, 60, and 62 (K,B)¹ incl. as "*P. nivea*" *pars* only. *Cumberland Gulf*, Taylor (K*), Kumlien (G), (?Giese ex Ambronn 1890, p. 78); Pangnirtung, Soper 1923 (O), Polunin 1934 apprg. *P. rubricaulis*, Turner 1934 and 5 (K); Nettilling Lake, Soper 1925 (O).
6. MELVILLE PENINSULA: c. Fury and Hecla Strait, Parry 1822 (K,C)¹ as "*P. nivea*"; Igloolik, Edwards (B), Parry (B,S*)¹ incl. as "*P. nivea* var."; Barrow River, Parry (B?, L,C) incl. as "*P. nivea*"; Palmer Bay, Bangsted 1922 (C); Duckett Cove, Parry 1821 (C)¹ as "*P. nivea*"; Martineau Island, Freuchen 1922 (C); Gore Bay, Freuchen 1922 (O,C); Repulse Bay, Parry 1821 (C), Olsen 1922 (N,C). *Vansittart Island*, Birket-Smith 1922 (C), Bangsted 1923 (N,C); Danish Island, Mathiassen 1921 (C), Freuchen 1922 (O,K,C); Georgina Island, Freuchen 1922 (C).
8. N. QUEBEC: r. Sugluk, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, Cape Welsford, Hooper 1821 (L, note only); South Bay, Malte 1928 (O,G,C) 120657 120659 as "*P. Pedersenii*," Sutton 1930 (G) incl. apprg. *P. emarginata*, Polunin 1934 and 6; Kirchoffer River, Mathiassen 1922 (C).
10. W. COAST HUDSON BAY: o. Whale Point, Comer 1894 (G); Chesterfield, Malte 1928 (O,G,C), Polunin 1936; Marble Island, Tyrrell 1893 (O) 7254 *vide* Rydberg.

205. ***Potentilla pulchella*** R.Br. in Ross' Voy. Disc., Appendix, p. cxlii (1819) (name only); described R.Br. in Suppl. App. Parry's 1st Voyage, p. cclxxvii (1824).

This, even if occasional specimens show transitions to other species—chiefly to *P. rubricaulis* and *P. nivea*—is generally quite distinct and easily recognized. Nevertheless, like most other members of the genus in the Arctic, it varies within wide limits. All the material from the north and

¹ There is also a specimen in Herb. Edinburgh.

most from the south of our area, even if it is itself variable, probably belongs to the same general series (whose "type" unfortunately cannot be traced) that Robert Brown called *P. pulchella*.¹ However, one collection from the southwest (J. M. Macoun, Fullerton 1910, No. 79179—distributed as "*P. bipinnatifida* var. *platyloba*" but annotated by Ostenfeld as "Probably *P. rubricaulis* Rydb.") is unusually tall (30 cm.) and robust, answering perfectly to the description of

var. **elator** Lange, *Conspectus Florae Groenlandicae* 1, p. 4 (1880).

This has by some been considered a mere *forma crassa*; Rydberg called it *Potentilla subarctica* Rydberg. Nevertheless, it seems to be worth retaining as a luxuriant southern form. Besides the specimens mentioned above, there are several others from the extreme south of our area that either fall within or closely approach the bounds of this variety, and also a strange form from Lake Harbour (Polunin 1934, Nos. 335 336) which is something else.

General Distribution. At least two-thirds circumpolar, stretching from Novaya Zemlya across northernmost Europe and America to Wrangel Island in northeast Siberia, but not yet recorded from elsewhere in Asia. Chiefly arctic: northernmost record from almost the northernmost botanical locality on earth, viz., Frederick E. Hyde Fiord, 83° 15' N. in Peary Land on the north coast of Greenland (Colonel I. P. Koch ex Ostenfeld and Lundager 1910, p. 27).

E. Arctic Distribution. Widespread throughout, at least in coastal regions, but of rather sporadic appearance and apparently absent from large parts of Baffin and of the mainland regions of the extreme south.

Occurrence. Fairly common in the north, generally rare in the central and southern parts. Grows chiefly on open clay or gravel plains, or sometimes among closed vegetation on manured areas. I have never seen it far from the seashore (cf. Gelting 1934, p. 105). Flowers and fruits plentifully, even very far north.

1. ELLESMERE: c. *Grant Land*, 82° 30' N., Bartlett 1908 (B,C); Dumbbell Harbour, Feilden 1876 (K,B); Floeberg Beach, Feilden (K,B); Discovery Harbour, Hart (G,B pars), Greely (G) *fide* Asa Gray; near Fort Conger, Hansen 1920 (N,K,C). "*Hayes Sound region*, Beitstad Fiord, Cocked Hat Island, Fram Harbour" (Simmons 1906, p. 49). *South Coast*, (Wolf ex Rydberg 1911-12, p. 8, sub nom. *P. Sommerfeltii*); "*Fram Fiord and Musk-ox Fiord*" (Simmons 1906, p. 49); Goose Fiord, Simmons 1901 and 02 (G,N,K,B,C). "*West Coast*, Coal Bay, between Eidsfjord and Baumann Fiord, Lands End" (Simmons 1906, p. 49).
2. DEVON, ETC., ISLANDS: f. "*North Kent*" (Simmons 1909b, p. 19). *Devon Island*, "*West Fiord*" (Simmons 1909b, p. 7); "*Lancaster Sound*" (Walker ex Hooker 1861, p. 83, sub nom. *P. nivea* var. *pulchella*); Dundas Harbour, Malte 1927 (O,G,C), Polunin 1936; Powell Creek, Lyall 1852 (K); Beechy Island and near, Lyall 1854 (K,S*); "*Northumberland Sound*" (Lyall ex Hooker 1857, p. 116). *Somerset Island*, Parry 1825 (K,B); "*Port Kennedy*" (Walker ex Hooker 1861, p. 83, sub nom. *P. nivea* var. *pulchella*).

¹ At least they conform well with specimens collected on Melville Island and Melville Peninsula by members of Parry's expeditions and named by Robert Brown himself; they also agree with the more detailed description given later by Lehmann (1835, p. 14), but not always so well with his figure, which was denounced, indeed not unjustly, by Wolf as "mala."

3. N. BAFFIN: o. "Ponds Bay" (Walker ex Hooker 1861, p. 83, sub nom. *P. nivea* var. *pulchella*); Arctic Bay, Polunin 1936 incl. 2585 apprg. *P. rubricaulis*; "Murray Maxwell Inlet" (Hoppner ex Parry 1824, p. 453).
5. S. BAFFIN: r. Lake Harbour, Malte 1927 (O,C), Polunin 1934 and 6, incl. 335 336 aberrant, and 1120 apprg. *P. nivea*.
6. MELVILLE PENINSULA: o. Igloolik, Edwards (B), Hooper 1822 (L), Parry 1822 (K,B,C); Winter Island, Hooper (L, note only).
8. N. QUEBEC: r. Cape Wales, Bell (O) 62377 var. *elator* fide Rydberg but then rev. as "*P. subarctica*"; Digges Island, Bell 1884 (O) 7329 var. *elator* fide Rydberg but rev. as "*P. subarctica*."
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) as "*P. rubricaulis*"; Nottingham Island, Bell 1884 (O) 8023 apprg. var. *elator* as "*P. subarctica*" scr. Rydberg. *Southampton Island*, Walrus Island, Baird 1936.
10. W. COAST HUDSON BAY: r. Fullerton, Macoun 1910 (O,C) 79179 var. *elator* as "*P. bipinnatifida* var. *platyloba*"; south of Eskimo Point, Birket-Smith 1923 (C).

206. **Potentilla Egedii** Wormskj. in Fl. Dan. IX, tab. mdlxxviii (1818).

P. Anserina of authors, not L.¹

Argentina Egedii Rydberg

There can be no reasonable doubt that *Potentilla pacifica* Howell and *P. Egedii* are conspecific, the latter being merely a reduced northern phase distinguished on account of its glabrous or glabrate leaves, but showing along the southern limits of its range all stages of gradation into the much more widely ranging and better known *P. pacifica*. The plant from Greenland so beautifully figured in Flora Danica was described first and must stand as the typical form. This is the usual form within our area, although many specimens, especially in the mainland regions of the extreme south, have the young leaflets distinctly white-tomentose below, and so tend towards (and in some cases probably attain) the form that is the usual one already at Hebron and Churchill, and generally persists alone farther south. Several varietal names have been proposed for this latter, under *P. Anserina* L.; we must use the earliest, as it seems impossible to maintain others based on the extremely fickle characters of leaf shape and size, and term the large and relatively southern plant

var. **groenlandica** (Tratt.) Polunin in Rhodora XLI, p. 40 (1939).

(*Potentilla Anserina groenlandica* Tratt.; *P. Anserina* β *grandis* Torrey and Gray; *P. pacifica* Howell; *Argentina pacifica* Rydberg.)

General Distribution. North America, transgressing into eastern Asia. The whole species stretching from Greenland across subarctic America to northeastern Siberia, southwards to Long Island, California, and Japan. Northernmost record c. 71° N. in West Greenland (cf. Porsild 1920, p. 96).

E. Arctic Distribution. Widespread in the extreme south, including southern Baffin,² but not found north of the 65th parallel.

¹ Cf. Fernald (1909, pp. 1 et seq.).

² The present species must be recorded as new to the flora of Baffin and indeed the whole Arctic Archipelago, Hart's "*P. Anserina*" from Ellesmere referring without doubt to a species belonging to some entirely different group (cf. Simmons 1906, p. 54).

Occurrence. Rather rare, and limited to saline habitats near high-tide mark. Grows chiefly in sheltered coves on muddy or sandy flats among other halophytes. Generally gregarious; flowers and fruits abundantly, but rarely exceeds 6, and never 10, cm. in height in our area.

5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 No. 8349. *South Coast*, Lake Harbour, Polunin 1936 Nos. 2344 2345.
7. N. LABRADOR: r. Burwell, Polunin 1936 No. 1110 var. *groenlandica*.
8. N. QUEBEC: r. Sugluk, Polunin 1936 No. 1493.
10. W. COAST HUDSON BAY: o. Chesterfield, Polunin 1936 No. 2218; Rankin Inlet, Macoun 1910 (O) 79189 typical form as "*P. Anserina* var. *groenlandica*."

207. ***Potentilla palustris* (L.) Scop., Fl. Carniol. ed. 2, I, p. 359 (1772).**
Comarum palustre L.

The hair-characters in the Marsh Cinquefoil seem to be so extremely unstable that I have not seriously attempted to sort my specimens in the manner proposed for the Scandinavian plant by Apotekare J. G. Gunnarsson (1914, pp. 217 *et seq.*). Nor do I feel that the material from within our area is properly segregable on characters of leaf shape and size except into minor ecological forms. Most of the specimens belong to var. *parvifolia* (Raf.) Fernald and Long, as is to be expected in view of their northern domicile; but even in stations lying strictly within our area (the northernmost known in eastern America outside of Greenland) there are to be found occasional specimens growing in the most favourable habitats that closely approach the head form, and farther south, where the large-leaved form is predominant, var. *parvifolia* appears in exposed places.

General Distribution. Circumboreal, with a wide latitudinal amplitude, but chiefly temperate and subarctic. Northernmost record "*Matokhka River* near the Samoyede colony," c. 73° 10' N. in Novaya Zemlya (Lynge 1923, p. 65).

E. Arctic Distribution. Known only from the mainland regions of the extreme south, where it is widespread, occurring on both sides of Hudson Bay and in Labrador.

Occurrence. Very rare, and no more than local and occasional in its three stations. Grows in wet, marshy places, chiefly by the sides of fresh-water pools or streams. Except where the situation is very sheltered, the flowering axes rise only a few centimetres above the surface of the mud or mosses on which their lower parts trail. Flowers fairly plentifully, and apparently succeeds in ripening fruits; but the growth is generally very poor and the plant appears to be eking out a somewhat precarious existence.

7. N. LABRADOR: r. Burwell, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1936.
8. N. QUEBEC: r. River Kovik, Low 1898 (O).
10. W. COAST HUDSON BAY: r. Chesterfield, Malte 1928 (O,G,C), Polunin 1936.

Potentilla tridentata Soland.

This beautiful species occurs in plenty on dry, sandy areas at Port Harrison, to the south of our area. It has also been found at Churchill, but with regard to the report of its occurrence within our area, which Simmons (1913, p. 108) upheld as at least possible, I can only say that I have not been able to find any specimens, either in the field or in herbaria. Thus, my own report (1934, p. 204), using identifications made by others in my absence, was entirely wrong, the specimens belonging instead to *Sibbaldia procumbens*. Likewise does the report of Gardner (1937, p. 40) probably refer to the latter species. Unfortunately no specimens are known that would settle the question as to whether Taylor (cf. 1863, p. 327) made the same mistake, although it seems probable that this is the explanation of his otherwise puzzling report. Thus, all things considered, I am inclined for the time being to exclude *Potentilla tridentata* from our Eastern Arctic flora, even if it is to be looked upon as a species quite likely to be added in the future.

208. *Sibbaldia procumbens* L., Sp. Pl. ed. 1, p. 284 (1753).

This seems to be an unusually good monomorph; at least I can see no constant difference between the material from within our area and specimens collected in widely separated parts of Europe and Asia. With us it generally grows in rather close low tufts, whose very tallest axes scarcely reach 10 cm., but which flower and fruit quite plentifully.

General Distribution. Circumboreal, chiefly subarctic and alpine. Northernmost record Kap Humboldt, c. 73° 10' N. on Ymer Island, East Greenland (Vaage 1932, p. 24).¹

E. Arctic Distribution. Widespread in the mainland regions of the extreme south, extending to the southernmost parts of the Arctic Archipelago, and doubtfully to Cumberland Gulf.

Occurrence. Rare except in the extreme southeast, where it is fairly frequent. Grows on the sides of late-snow depressions, or on slopes that are at least well covered with snow in winter, preferring those that are damp and sheltered but receive a fair amount of sunshine.

(C. BAFFIN: ? "Cumberland Gulf, Niatolik and Milikdjuak (Midliattwack) Island" (Taylor 1863, p. 327, sub nom. *Potentilla tridentata*).)

5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 No. 8046; York Harbour, Potter 1937 No. 8045.
7. N. LABRADOR: f. Cape Chidley, Bell 1884 (O); Burwell, Malte 1928 (O,G,C), Porsild 1930 (O*), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G); Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: r. Wolstenholme, Polunin 1936 No. 2249.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B) as "*Potentilla tridentata*."
10. W. COAST HUDSON BAY: r. ?"Chesterfield" (Gardner 1937, p. 40, sub nom. *Potentilla tridentata*); Cape Eskimo, Macoun 1910 (O,C).

¹ I can find nothing to confirm the claim of Hultén (1929, p. 71) that the species reaches "to about 74° N. lat." in West Greenland.

209. *Dryas integrifolia* M. Vahl in Skr. Nat. Selsk. Kjøbenhavn IV, 2, p. 171 (1798).

D. octopetala L. var. *integrifolia* (M. Vahl) Cham. and Schl.

It seems best to keep this separate from *D. octopetala* (cf. Kjellman 1883, p. 341), even if they do "run together" in places where their ranges meet (cf. Sørensen 1933, p. 59). Despite reports to the contrary, including some early ones from within our area, true *D. octopetala* seems to be absent from the parts of North America that lie between Greenland and the Rocky Mountains; certainly all the material from within our area belongs to *D. integrifolia*, the lovely "Arctic Avens." This is indeed one of the most abundant, ubiquitous, and generally important plants throughout our area, forming everywhere a characteristic "barrens" community, and dominating huge tracts of the less hospitable country in the south as well as the north. The plants vary greatly in size and luxuriance with local conditions, giving all sorts of ecological forms. Thus, in exposed places the growth (except perhaps of the long, woody taproot) is generally much reduced, the plant forming a close, hard tussock with tiny leaves, which scarcely reach 1 mm. in breadth, whereas in favourable sheltered places the whole may be quite loose and rampant, with leaves nearly 1 cm. broad. Besides this general run of material that is variable but best kept all together, there are within our area two rather extreme variants that seem worthy of recognition.

The first of these is distinguished by having its broad leaves crenate-dentate for at least the lower half of their length; it was considered by its discoverer to be intermediate between *D. octopetala* and *D. integrifolia*. However, it has since appeared clear to several observers in the field that this form is merely a luxuriant phase of the latter species, as has indeed been conclusively shown by Porsild (1920, p. 104), who witnessed and figured, in the same plant washed down from an exposed alpine to a damp lowland habitat, the complete change from the entire-leaved form. The extreme with dentate leaves is, accordingly, to be termed:

f. *intermedia* (Nathorst) Polunin in Jour. Bot. LXXVI, p. 101 (1938).

(*Dryas integrifolia* M. Vahl var. *intermedia* Nathorst; *D. octopetala* L. subsp. *integrifolia* (M. Vahl) Hartz f. *intermedia* (Nathorst) Hartz.)

This can be found in favourable situations almost throughout our area.

The other outstanding form is distinguished by having the leaves tomentose and greyish above as well as below. It has been stated by Porsild (1920, p. 105) to be without transitions to the typical form, but this is not the case in our area or in Newfoundland. Even if it has with us been found fully developed only in Ellesmere and northern Baffin,¹ it seems to be a mere phase developed under the most arid conditions, and hence to be upheld only as

f. *canescens* (Simmons) Fernald in Rhodora XXXV, p. 273 (1933).

In *D. octopetala* this seems to be closely paralleled by f. *argentea* (A. Blytt).

¹ Major Burwash's specimen from Chesterfield is not quite typical.

General Distribution. North America, transgressing into eastern Asia (forming a circumpolar series with the closely related *D. octopetala*). Chiefly arctic and alpine. Northernmost record at the northernmost botanical locality on earth, viz., Lockwood Island¹, 83° 24' N. on the north coast of Greenland (Lockwood ex Simmons 1909, p. 60).

E. Arctic Distribution. Surely complete on ice-free land.

Occurrence. Abundant almost everywhere. Chiefly in dry and exposed, poorly vegetated places, where it is often dominant; but having such a wide range of tolerance to almost all environmental conditions that it is rarely altogether absent from any habitat or community. Except in sheltered and well-watered places where it may be loose and rampant, *Dryas integrifolia* generally forms rather close domed tussocks some 5-15 cm. high, above whose dark brownish surface the abundant flowering and fruiting axes rise a farther 5-10 cm.

1. ELLESMERE: c. everywhere—numerous records from almost all localities, incl. Cape Joseph Henry, Feilden 1876 (K) as "*D. octopetala*", Floeberg Beach, Feilden (B) as "*D. octopetala*", Shift Rudder Bay, Feilden (K) as "*D. octopetala*", Discovery Harbour, Hart (G) as "*D. octopetala*"; *Hayes Sound region*, Feilden 1875 (K) as "*D. octopetala*", Bache Peninsula, Malte 1927 (O,G) incl. f. *canescens*, Pim Island, Simmons 1898 (C) 264 f. *intermedia*, Cape Sabine, Feilden (B) as "*D. octopetala*"; *South Coast*, Craig Harbour, Jakeman and Fielder 1923 (O) apprg. f. *canescens*, Polunin 1934 and 6 incl. f. *intermedia*, and 840 apprg. f. *canescens*.
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities, incl. "*Devon Island*, Cape Riley" (McClintock ex Markham 1909, p. 245, sub nom. *D. octopetala*)².
3. N. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Pond Inlet, Polunin 1934 and 6 incl. 688 apprg. f. *canescens*, near Cape Hallowell, Freuchen 1922 (C) 42 f. *canescens*.²
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Clyde, Malte 1927 (O,G) f. *intermedia*, Polunin 1934 and 6 incl. f. *intermedia*.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.²
7. N. LABRADOR: c. everywhere—numerous records from almost all localities.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities, incl. *Southampton Island*, South Bay, Malte 1928 (O,G,C) incl. 120598 f. *intermedia*, Polunin 1934 and 6 incl. f. *intermedia*.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities, incl. Chesterfield, Freuchen 1923 (C) incl. 724 f. *intermedia*, Burwash 1926 (O) incl. f. *canescens*.

LEGUMINOSAE

210. *Astragalus eucosmus* Robinson in Rhodora X, p. 33 (1908).

A. oroboides Hornem. var. *americanus* Gray

A. elegans (Hook.) Sheldon, 1894; not Bunge, 1869

This graceful and characteristic species has recently proved to be not infrequent in places along the shores of Hudson Strait in the extreme south of our area, including in its range the south coast of Baffin and thus the

¹ Three other species are known from here, viz., *Cerastium alpinum*, *Papaver radiculatum*, and *Saxifraga oppositifolia*.

² In Herb. Edinburgh are the following specimens erroneously labelled "*Dryas octopetala*": (1) Port Kennedy, Somerset Island, coll. Walker; (2) Port Bowen, N. Baffin, coll. Parry 1825; and (3) Igloolik, Melville Peninsula, coll. Parry 1823.

Arctic Archipelago. Jacques Rousseau (1933, p. 42) gives a map of its distribution, to which must now be added several new stations in northern Quebec. His only record from within our area, which on the next page he clearly says was "recolté par Malte à Lake Harbour, Terre de Baffin, en 1928 (119771)", should of course be "spotted" on the south coast instead of in Cumberland Gulf, where the species has never been found. Malte's collection is cited as "un des spécimens les plus typiques" of f. *minor* (Hook.) Rousseau, but this scarcely seems worth upholding in our area, where the plant varies quite clearly according to local conditions from less than 10 to nearly 30 cm. in height. It also varies somewhat in the size of the leaflets and mature fruits, and in the length of the inflorescence.

General Distribution. North America, chiefly subarctic and alpine. The map of Rousseau (*l.c.*) shows the range as extending north of the Arctic Circle in Alaska, but the northernmost record that I can find is Great Bear Lake, c. 66° N. in the District of Mackenzie (J. M. Bell, specimen in Herb. Ottawa).

E. Arctic Distribution. Apparently limited to the eastern half of the extreme south, being widespread in the mainland regions of Quebec and extending to the south coast of Baffin.

Occurrence. Occasional to locally frequent within its limited area, growing chiefly on well-drained slopes or rather dry sandy flats, most often in sunny and sheltered coves near the sea. Flowers and fruits abundantly.

5. S. BAFFIN: r. South Coast, Lake Harbour, Malte 1928 (O,G,C), Knapp 1933, Polunin 1934 and 6.

8. N. QUEBEC: o. Wakeham Bay, Polunin 1936 Nos. 1399 1422; Sugluk, Polunin 1936 No. 1548; Wolstenholme, Polunin 1936.

211. *Astragalus alpinus* L., Sp. Pl. ed. 1, p. 760 (1753).

Phaca astragalina DC.

Ateliphragma alpina (L.) Rydberg

The little "Alpine Milk Vetch" in our area varies considerably in robustness and general appearance; also in the colour of the flowers and in the size, shape, and hairiness of the leaflets. However, this tendency to variation does not appear to concern the more conservative characters, and in those mentioned it becomes manifest chiefly, if not wholly, under differing conditions of exposure and water and food-salt availability. Changes of the habitat along these lines can produce in closely contiguous plants differences almost as extreme as are to be found in specimens from anywhere within the great range of the species (excluding for the moment certain recognized varieties). In view of this, it would seem wholly superfluous to attempt the delimitation of any subsidiary forms within our area (cf. also Malte 1934, p. 179). Var. *parvulus* Rousseau is just such an ecological phase, approached or attained in dry exposed situations throughout the range of the species, and thus certainly not retainable as a true variety. Nor do I think that Rousseau would have proposed it if he had really known the species in the field, or had seen more northern material

of it; for it must be noted that his map (1933, p. 23) purporting to give the distribution of the species is quite deficient, and also that he has marked his record from "Melville Island" right in the unexplored centre of the great Victoria Island.

General Distribution. Circumpolar (except that it is apparently absent from Greenland), arctic and alpine. Northernmost record Lichutin Island, c. 76° N. in Novaya Zemlya (Lyngé 1923, p. 67).

E. Arctic Distribution. Complete northwards to the 65th parallel, but not yet found in central Baffin or on most of Melville Peninsula. Reappearing in plenty in northern Baffin, but not recorded north of Lancaster Sound.

Occurrence. Common in the extreme south and frequent again in northern Baffin. Grows chiefly on rather dry and exposed, sandy or gravelly areas, where it may be locally abundant, forming extensive mats. Flowers and fruits profusely. The fruiting axes are generally around 10 cm. high, but may be less than 5 or, on sheltered calcareous areas, sometimes more than 15 cm. Generally produces very numerous root nodules. In places where it is especially plentiful the grasses appear to grow taller and greener.

3. N. BAFFIN: f. *Bylot Island*, Button Point, Wilcox 1928 (O); Qaersut, Freuchen 1924 (C); Pond Inlet and near (Walker ex Hooker 1861, p. 83), and eight others (O,M,G,N,C); Arctic Bay, Malte 1927 (O,G,C), Polunin 1936.
5. S. BAFFIN: f. *Frobisher Bay*, Sewall 1927 (G). *South Coast*, Lake Harbour and near, Malte 1927, 28, and 33 (O,G,N,C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; Fox Island, Soper 1926 (O); Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Soper 1926 (O,N), Malte 1928 (O,G,C), Polunin 1934.
6. MELVILLE PENINSULA: o. *Vansittart Island*, Bangsted 1923 (O,C); Georgina Island, Freuchen 1922 (C); Repulse Bay, Olsen 1922 (C).
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O); Burwell, Borden 1904 (O), Macoun 1910 (O,N,C), Malte 1928 (O,G,C), Polunin 1936; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; "Cape Wales" (Bell ex Macoun 1886, p. 508); Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1928 and 33 (O,G), Polunin 1936; Sugluk, Malte 1933 (O,G), Polunin 1936; Wolstenholme, Low 1898 (O,N), Johansen 1927 (C), Malte 1928 (O,G), Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Salisbury Island, Buchan 1938; Nottingham Island, Bell 1884 (O), Mackenzie 1886 (O), Johansen 1927 (C). *Southampton Island*, South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Polunin 1934 and 6.
10. W. COAST HUDSON BAY: o. Chesterfield, ? Burwash 1926 (O), Malte 1928 (O,G,C), Polunin 1936; south of Eskimo Point, Birket-Smith 1923 (C).

212. *Oxytropis foliolosa* Hook., Fl. Bor.-Am. I, p. 146 (1834).

This dainty and distinct species, which in some features seems almost to unite the present genus with *Astragalus*, appears to vary very little in our area except in the shape and spacing of the leaflets. Even in stature it is far more constant than most of our plants, the gracefully curved fruiting scapes being generally between 10 and 15 cm. long. *Oxytropis*

joliolosa was first discovered in our area by the late Dr. M. O. Malte, at Wakeham Bay in 1927. It has since proved to grow at two other points within our area on the mainland of Quebec, and also on the other side of Hudson Strait at Lake Harbour in Baffin, to which it must be recorded as new, as indeed it is to the entire Arctic Archipelago.

General Distribution. North America. Subarctic and north-temperate regions of the east; also in the Rocky Mountains. Northernmost record, mouth of Tree River, south coast of Coronation Gulf, 67° 46' N. in the District of Mackenzie (Cox and O'Neill ex Macoun and Holm 1921, p. 17A).

E. Arctic Distribution. As with *Astragalus eucosmus* (See page 288), apparently confined to the eastern half of the extreme south, being widespread in the mainland of Quebec and extending to Lake Harbour on the south coast of Baffin.

Occurrence. Locally frequent in Quebec; rare in Baffin. To be found most often in sunny, sheltered coves near the sea, as it prefers rather dry sandy soils. Often gregarious, growing almost as well in closed heathy or grassy communities as in entirely open areas; flowering and fruiting plentifully.

5. S. BAFFIN: r. South Coast, Lake Harbour, Polunin 1934 and 6 Nos. 387 2333 2334 2346.

8. N. QUEBEC: o. Wakeham Bay, Malte 1927 and 33 (O,G,N,C), Polunin 1936; Sugluk, Polunin 1936; Cape Smith, Malte 1928 (O,G) 120885 as "*Astragalus alpinus*."

213. ***Oxytropis terrae-novae*** Fernald in *Rhodora* XXX, p. 147 (1928).

O. campestris (L.) DC. var. *caerulea* of authors, not Koch

My material of this species varies in the amount of ciliation on the marcescent stipules and in the orientation of the pubescence on the scapes, some specimens being rather reminiscent of *O. arctica* R.Br. However, even if the two prove some day to be conspecific—although amply distinct as geographic varieties—I think the name *O. arctica* should be discarded, because Robert Brown cited very heterogeneous material under it, with the result that it has since been an almost constant source of confusion. Meanwhile it seems that typical *O. arctica* occurs only to the west of our limits, and that all records of it from within our area are to be transferred to the present or one of the following species—cf. Fernald (1928b, pp. 144-5), to whom we owe a great debt for his elucidation of this genus in northeastern America.

With us *O. terrae-novae* is plentiful almost everywhere it occurs, flowering and fruiting successfully and growing generally 10-15 cm. high. To the distribution map given by Fernald (1933, p. 275) must now be added several stations farther to the west in Hudson Strait, and Port Harrison, which lies just outside our area on the east coast of Hudson Bay.

General Distribution. Northeastern America. From Newfoundland to northernmost Labrador, and westwards to the east coast of Hudson Bay. Northernmost record Wakeham Bay, 61° 36' N. on the south shore of Hudson Strait (Frits Johansen 1927, specimen in Copenhagen Herbarium, later confirmed by Malte 1933 and Polunin 1936).

E. Arctic Distribution. Confined to the mainland regions of Quebec and northern Labrador in the eastern half of the extreme south.

Occurrence. Frequent to locally abundant in its limited area, but elsewhere replaced by *O. Maydelliana* (q.v.). Grows chiefly in rather dry, sandy or gravelly areas, especially in open, sunny spots in heaths or grassy "meadows"—to whose luxuriance it may contribute as well by introducing nitrates to the soil as by its own growth.

7. N. LABRADOR: f. Cape Chidley, Bell 1884 (B) 527 *fide* Fernald; Burwell, Soper 1926 (O,N) 119019, Johansen 1927 (C), Malte 1928 and 33 (O,G,C), Polunin 1934 and 6, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. Diana Bay, Knapp 1936; Cape Wales, Bell 1884 (O,G) 34783; Stupart Bay, Payne 1886 (T) as "*Oxytropis arctica*"; Wakeham Bay, Johansen 1927 (C), Malte 1933 (O,G,N), Polunin 1936; King George Sound, Bell 1897 (O) 18725.

214. *Oxytropis hudsonica* (Greene) Fernald in *Rhodora* XXX, p. 142 (1928).

This little-known species seems to come even nearer to *O. arctica* than the last, and probably all the reports of *O. arctica* from as far east as the west coast of Hudson Bay and the adjacent islands belong to *O. hudsonica*, which has similar purplish flowers and other features.

General Distribution. North America: according to Fernald (l.c.) "About Hudson Bay and westward to Mackenzie District." Northernmost record the island of Igloolik, 69° 22' N. off the north coast of Melville Peninsula (Edwards—no date, but collected during Parry's second expedition, 1821-3—specimen in British Museum, sub nom. *O. uralensis*).

E. Arctic Distribution. Confined to the western half south of the 70th parallel, being known from the west coast of Hudson Bay and from Southampton Island and Melville Peninsula.

Occurrence. Only rare to occasional. Found in rather dry and open spots in heaths, including both the poor *Dryas* type in exposed places and the more luxuriant *Cassiope* association in sheltered, snow-covered depressions.

6. MELVILLE PENINSULA: r. Igloolik, Edwards (B) as "*O. uralensis*"; Repulse Bay, Hooper 1821 (L) as "*Astragalus alpinus*," Parry (K,B) as "*O. uralensis*."
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, north side of White Island, Angel 1933 (W) 1432992 1432994 as "*O. nigrescens*"; York Bay, Hooper 1821 (L); South Bay, Malte 1928 (O,G,C) 119781 *fide* Fernald, Sutton 1930 (G) incl. *pars* with *Astragalus alpinus*, Polunin 1934.
10. W. COAST HUDSON BAY: r. Chesterfield, Tyrrell 1893 (O) 101056 *fide* Fernald, orig. as "*O. campestris* var. *viscida*"; Rankin Inlet, Macoun 1910 (O,G,N,C) *fide* Fernald.

215. *Oxytropis Maydelliana* Trautv. in *Acta Horti Petrop.* VI, p. 16 (1879).

O. leucantha A. Gray, in part

O. campestris (L.) DC. var. *melanocephala* Hook.

O. campestris var. *sordida* of authors

This is by far the most abundant and widespread member of the genus in our area. To it are probably to be referred the vast majority of the reports of "*Oxytropis campestris*" from within our area, even if I

have not in more than a few cases dared to take up records where no specimen has been seen. However, it appears to be almost absent from the extreme southeast of our area, where it is replaced, in a manner not at all understood, by the ecologically similar but taxonomically quite distinct *O. terrae-novae*.

Except in the colour of the hairs, which can vary from blackish to shining white on the selfsame pod, *O. Maydelliana* is relatively constant within our area. It appears to flower and fruit abundantly and successfully throughout its range; the fruiting axes are generally around 10 cm. long.

General Distribution. North America, transgressing into eastern Asia. Arctic and subarctic. Northernmost record Strathcona Sound,¹ c. 73° 15' N. in northern Baffin (Soper 1923—specimen in Herb. Ottawa).

E. Arctic Distribution. Almost complete in the south and widespread to northern Baffin, but apparently absent from some considerable areas, including central Baffin.²

Occurrence. Generally plentiful when present, and sometimes abundant to codominant. Grows chiefly on rather dry grassy banks or heathy areas, often in exposed situations, but towards its northern limit is also found on open clay-plains and gravel ridges, where indeed it may flourish and become by far the most conspicuous plant.

3. N. BAFFIN: c. *Bylot Island*, Button Point, Wilcox 1928 (O); Tuarpat, Freuchen 1924 (C); Pond Inlet and near, Lyall 1854 (K,S*) as "*O. campestris*," and seven others (O,M,G,C), incl. Malte 1927 (O,G,C) incl. 118337 as "*Oxytropis melanocephala*." *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O) 111592; Arctic Bay, Malte 1927 (O,G,C), Polunin 1936; Saputit, Mathiassen 1922 (C); Gifford Fiord, Mathiassen 1922 (C); near Cape Hallowell, Freuchen 1922 (C).
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G,N,K,C). *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C) incl. 118338 as "*O. melanocephala*," Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; Amadjuak, Bell 1897 (O) 18726; Bowdoin Harbour, Robinson 1922 (G) 14; Cape Dorset, Soper 1926 (O,G) 119025 119026 as "*O. melanocephala*," Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: c. *Fury and Hecla Strait*, Parry 1822 (C) as "*O. campestris*"; Igloolik, Edwards (B) as "*O. uralensis*"; Winter Island, Ross 1821 (K) as "*O. campestris*"; Gore Bay, Freuchen 1922 (K,C); Repulse Bay, Parry 1821 (C) as "*O. campestris*," Olsen 1922 (O,C). *Vansittart Island*, Bangsted 1922 and 3 (C), Freuchen (N); Danish Island, Freuchen 1922 (C,N); Georgina Island, Freuchen 1922 (C).
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O) 34786.

¹ Professor Fernald (1928b, p. 145) speaks of its existence "In the Melville Island collections of Parry's Voyage in the *Gray Herbarium*", but this is an error due to Sereno Watson, who wrote in the fly-leaf of the book in which the plants are mounted "Set of plants of Capt. Parry's Arctic Expedition—collected on Melville Island in 1820 named by Robert Brown Reed. from W. T. Thiselton Dyer, Director, Dec. 1888". Actually the plants were collected on Parry's second voyage, as is marked elsewhere on the fly-leaf by Robert Brown. They, therefore, come from the Hudson Strait and Fox Basin regions (especially from Melville Peninsula) instead of from Melville Island, and are not to be taken as duplicate types of Robert Brown's species published in *Chloris Melvilliana*, although some of them are mentioned at the end of that important work.

² The peculiar lack of *Leguminosae* in central Baffin is paralleled by a similarly unaccountable lack of any member of the family in most parts of Greenland.

8. N. QUEBEC: 1. Sugluk, Malte 1933 (O,G,C); Wolstenholme, Low 1898 (O,G) 22991, Johansen 1927 (C), Malte 1928 (O,G), Polunin 1934 and 6; Digges Island, Bell 1884 (O,B) incl. 526 5345 as "*O. arctica*," etc.; Cape Smith, Malte 1928 (O,G), Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: 1. *Southampton Island*, White Island, Mathiassen 1922 (C); Cape Welsford, Hooper 1821 (L); Duke of York Bay, Parry 1821 (B); South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: f. Wager Bay, Macoun 1910 (O,G,C) 79103; Chesterfield and near, Tyrrell 1893 (O) incl. 34787, Malte 1928 (O,G,C), Gardner 1933 (G), Polunin 1936; south of Eskimo Point, Birket-Smith 1923 (C).

216. ***Oxytropis arctobia*** Bunge in Mém. Acad. Imp. Sci. St. Pétersb. ser. 7, XXII, 1, p. 114 (1874).

O. arctica of authors

O. nigrescens of authors

Indeed a "beautiful little plant," as Simmons (1913, p. 113) remarks, which can scarcely occur on Melville Island "or it would not have escaped the collectors of the material for the Chlor. Melv." There is, to be sure, a specimen in the Gray Herbarium among a collection that has often been referred to as coming from Melville Island (cf. Fernald 1928b, p. 145), but actually was made far to the southeast during Parry's second voyage. Hence, Arctic Bay in northern Baffin remains the northernmost known locality for this well-characterized species. This Arctic Bay material differs from all other specimens that I have seen in having seeds that are light brown instead of almost black when ripe, and in having the insides of the pods essentially glabrous instead of densely flocculent-pubescent. The pubescence on the outside of the pods also tends to be less dense and spreading; indeed further collections including flowering specimens may indicate this to be an undescribed species, but on my limited fruiting material it seems safer to describe it merely as

var. ***hyperarctica*** n. var.

A forma typica differt interioribus leguminum glabris vel necessario glabris, seminibusque maturis candidis fulvis. Legumina praeterea generatim aperierunt latius quam in forma typica, assecuta quandoque 1.6 cm. in latitudine. Type in Herb. Ottawa, cotypes in Gray Herbarium, British Museum, and Fielding Herbarium of Oxford University: *Nicholas Polunin*, Arctic Bay, Baffin Island, No. 2583, Sept. 10, 1936. Figure on Plate VIII.

General Distribution. North America; arctic and subarctic regions from northern Baffin and Victoria Islands southwards to Hudson Bay, Mackenzie, and the northern Rocky Mountains. Northernmost record Arctic Bay, 73° 5' N. in northern Baffin (Polunin 1936, var. *hyperarctica*).

E. Arctic Distribution. Widespread in the centre and southwest, stretching from northern Baffin and Melville Peninsula to the south coast of Baffin; also on Southampton and adjacent islands in Hudson Bay.

Occurrence. Local and generally only occasional. Grows in rather dry and exposed heathy areas, or on more open gravel ridges or plains of desiccated clay or soft shale. Forms close and low, silvery grey tufts generally 5-15 cm. in diameter, from whose surface the deep blue flowers stand erect and solitary. Blossoms early and plentifully and sets ripe seed.

3. N. BAFFIN: r. Arctic Bay, Polunin 1936 Nos. 2583 2584 var. *hyperarctica*.
5. S. BAFFIN: o. *Gordon Bay*, Fox Island, Soper 1926 (O,G,N); Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Robinson 1922 (G),¹ Burwash 1924 (O), Soper 1926 (O,G), Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. Fury and Hecla Strait, Parry 1822 (C); Igloolik, Edwards (B); Barrow River, Hooper 1821 (L), Parry (K,B) *fide* Fernald; Winter Island, Edwards (B*); Gore Bay, Freuchen 1922 (C); Repulse Bay, Olsen 1922 (C). *Vansittart Island*, Bangsted 1923 (C); Danish Island, Freuchen 1922 (C); Georgina Island, Freuchen 1922 (C).
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: r. Walrus Island near Cape Fullerton, Freuchen 1922 (C).

217. ***Oxytropis podocarpa*** A. Gray in Proc. Am. Acad. VI, p. 234 (1864).
O. arctica δ *inflata* Hook.

Two of our three collections of this species, whose peculiar membranaceous, short inflated legume immediately sets it off from all others, are typical and unmistakable, matching very well the type and other specimens in the Gray Herbarium. The third collection is my own from Akpatok Island, which is in the British Museum where there is no authenticated material for comparison; but even if pods and flowers are lacking there seems to be no reason to question Dr. G. Taylor's original determination (cf. Polunin 1934, p. 204). *Oxytropis podocarpa* is, according to Fernald (1928b, p. 154), "A rare species, not often collected."

General Distribution. North America; subarctic and alpine. According to Fernald (*l.c.*) "southern Baffin Island and northern Labrador; Yukon and Alaska to southern Alberta." Northernmost record 67° N., 141° W. in Yukon Territory (Cairnes ex Fernald 1928b, p. 154).

E. Arctic Distribution. Known only from Frobisher and Amadjuak Bays in southern Baffin, and from one cliff-top near the south end of Akpatok Island in Ungava Bay (cf. Polunin 1932, p. 135).

Occurrence. Apparently rare, or at least very local. A species of whose ecology practically nothing is known; however, it appears probable that this is similar to the ecology of the last species, as the only specimens that I have seen in the wild state were growing on the exposed top of a limestone cliff, where the vegetation was less poor than usual owing to the proximity of the nesting sites of countless seabirds.

5. S. BAFFIN: r. *Frobisher Bay*, Sewall 1927 (G). *South Coast*, Amadjuak Bay, Soper 1926 (O,G,N).
9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B).

¹ Reported in *Rhodora* 1923, p. 113, in the mis-spelt form "aretiloba".

218. *Oxytropis Bellii* (Britton) Palibine in Bull. Soc. Bot. Genève, sér. 2, II, p. 19 (1910).

Spiesia Bellii Britton

As has already been pointed out by Malte (1934, p. 179), Simmons (1913, p. 111) need not have had any hesitation about holding this apart from "*O. campetris*," because it is, as Fernald (1928b, p. 150) stated and later expounded, "a remarkably distinct species," even if it has had "a most unconventional introduction to botanical recognition."

General Distribution. North America. Apparently restricted to the northern Hudson Bay region, where it is known on or near the west coast from Nunaralaq by Egg Island, 59° 50' N., to about 66° N. on Melville Peninsula, and on the east coast from Digges Island, the type locality.¹ Northernmost record Gore Bay, c. 66° 20' N. on the south coast of Melville Peninsula (Peter Freuchen 1922—specimens in Ottawa and Copenhagen Herbaria).

E. Arctic Distribution. As stated above under "general distribution", limited to the western half south of the Arctic Circle.

Occurrence. Not infrequent in parts of its limited area, and conspicuous owing to the light greyish colour of its foliage. Occurs chiefly in open places in the heath, the scapes being around 12 cm. high and producing plentiful flowers and fruits, which ripen seed.

6. MELVILLE PENINSULA: 1. Gore Bay, Freuchen 1922 (O,C) *vide* Ostenfeld. Vansittart Island, Danish Island, Freuchen 1922 (C); Georgina Island, Freuchen 1922 (C).
8. N. QUEBEC: r. Digges Island, Bell 1884 (O,G,N) incl. 1164 5324 as "*O. podocarpa*", etc.
10. W. COAST HUDSON BAY: c. Whale Point, Freuchen 1923 (C); Fullerton, Borden 1904 (O,G,N,K), Macoun 1910 (O,G,N); Depot Island, Comer 1894 (G) *vide* Fernald; Chesterfield, Tyrrell (O), Burwash 1926 (O,G,N), Malte 1928 (O,G,C), Sutton 1930 (G), Polunin 1936; Rankin Inlet, Macoun 1910 (O,G,N,C); south of Eskimo Point, Birket-Smith 1923 (C).

219. *Hedysarum Mackenzii* Richardson in Franklin, Narr. 1st Jour., App., p. 745 (1823).

The scanty Chesterfield material of this species, and indeed all that I have examined from Churchill and adjacent regions to the south, has the leaflets nearly or quite glabrous above instead of being "*utrinque pilis brevibus incanis*" in the manner described by Richardson (*l.c.*). It thus conforms more closely to that that is now generally known in the United States as "*Hedysarum pabulare* A. Nelson." This latter, with my material, deviates from the description of Richardson also in certain other minor respects. But it was known for three-quarters of a century as *Hedysarum Mackenzii*, and does not seem worthy of retention as a separate species any more than do a host of other plants that are common to the Rocky Mountains and the Mackenzie basin. Hence, I propose it as

var. *pabulare* (A. Nelson) *n. comb.*

(*Hedysarum pabulare* A. Nelson in Proc. Biol. Soc. Washington XV, p. 185 (1902).)

¹ The reports from Mansel (Mansfield) and Melville Islands are erroneous, as has already been pointed out by Fernald (1928b, p. 151).

The typical form appears to be absent not only from our area and from the United States, as has been implied above, but also from the entire Hudson Bay region.

General Distribution. North America, transgressing into eastern Asia. Low arctic, subarctic, and alpine. Northernmost record Ballast Beach, 74° 30' N., the northernmost point of Banks Island (Miertsching ex Simmons 1913, p. 113).

E. Arctic Distribution. Limited to two small collections from Chesterfield on the west coast of Hudson Bay, in the extreme southwest.

Occurrence. Evidently local and rare, though plentiful to the south and west, where it grows chiefly on rather dry, sandy or gravelly flats, often predominating in dwarf heaths—growing most often 20-30 cm. high and flowering and fruiting plentifully. All var. *pabulare*:

10. W. COAST HUDSON BAY: r. Chesterfield, Burwash 1926 (O), Gardner 1933 (G).

CALLITRICHACEAE

220. *Callitriche verna* L., emend. Loennr., Observ. crit. pl. Suec. illust., Upsaliae, p. 17 (1854).

Until 1937 no member of this family was recorded from our area, or from anywhere near its boundaries. However, in 1928 Dr. Malte found some sterile specimens that probably belong to the present species at Chesterfield on the west coast of Hudson Bay, whence it was later reported by G. Gardner (1937, p. 41), and in 1936 I twice found it fruiting at the same place. The plants are all referable to

var. *minima* (Hoppe) Lange, Conspectus Fl. Groenl. 1, p. 14 (1880).

General Distribution. Circumboreal; wide-ranging latitudinally, but rarely arctic. "Nordgrense på Ingøy, 71° 4-5' " N. off the north coast of Scandinavia (Dahl 1934, p. 363).

E. Arctic Distribution. Known only from Chesterfield on the west coast of Hudson Bay in the extreme southwest.

Occurrence. Apparently very rare, but so diminutive and restricted in habitat that it may have been extensively overlooked. At Chesterfield it grew on damp mud by the sides of pools whose water had dried up, its creeping and intertwining axes forming loose, flocculent wefts lying on the surface in which it rooted. All var. *minima*:

10. W. COAST HUDSON BAY: r. Chesterfield, Malte 1928 (O,G,C) 120521, Polunin 1936 Nos. 2115 2218, (Gardner 1937, p. 41, sub nom. *C. palustris*).

EMPETRACEAE

221. *Empetrum nigrum* L., Sp. Pl. ed. 1, p. 1022 (1753).

All the sufficiently complete specimens of Crowberry from within our area that I have examined had bisexual flowers and are referable to the usual arctic *E. hermaphroditum*¹ (Lange) Hagerup (1927, p. 7). Even if Malte (1934, pp. 179 *et seq.*) has, after a lengthy discussion, come to the

¹ Often mis-spelt "hermaphroditicum".

conclusion that this "cannot be upheld as a taxonomic unit distinct from *E. nigrum*," I am unable to forget, after having had its characters demonstrated to me by Dr. Hagerup himself, that it satisfies all three of the "tests" to which we like to put the average species, being separable (1) on morphological differences, (2) on its geographical range or ecological preferences, and (3) on cytological differences. Accordingly, I think it best, as the morphological differences are poor and connected by intermediate forms, to retain it merely as

var. **hermaphroditum** (Lange) Soerensen in Medd. om Grønland, 3, p. 95 (1933).

Indeed the cytologists Professor Karl Sax and Dr. Clausen verbally advised me so to do, although they spoke of this problematical plant as a "fairly good microspecies." It must be noted as varying somewhat within our area in the type and amount of the pubescence on the young shoots and expanding leaves—but not, I think, in features that are of any real taxonomic importance.

General Distribution. The typical form circumboreal, the variety circumpolar. Northernmost record Cape Viele, 78° 53' N. in Ellesmere (Simmons 1899—specimen in Copenhagen Herbarium).

E. Arctic Distribution. Probably complete over the southern half and fairly general northwards to northern Baffin. Not definitely known from Devon Island or southern Ellesmere, but reappearing in the Hayes Sound region.

Occurrence. Abundant in many parts of the southern half, where it is one of the chief dominants, but less frequent (sometimes locally absent) in northern Baffin, and local or rare in the Far North. Grows in the south chiefly (and in the north entirely) on rather dry, healthy areas that are fairly well sheltered in summer and covered with snow all winter. Here it forms extensive and sometimes almost pure mats, which rise generally 4-8 cm. above the surface of the ground. Flowers and fruits abundantly in the south, but rather sparingly in its northernmost localities. All var. *hermaphroditum*:

1. ELLESMERE: l. *Hayes Sound region*, Cape Viele, Simmons 1899 (C); "Lastraea Valley" (Simmons 1906, p. 43); Twin Glacier Valley, Simmons 1899 (N,K) 850; "Cape Sabine" (Hart 1880, p. 239).
2. DEVON, ETC., ISLANDS: r. "Somerset Island, Port Leopold" (McClintock ex Markham 1909, p. 246).
3. N. BAFFIN: o. *Bylot Island*, west of Qaersut, Freuchen 1924 (C); Pond Inlet and near, Mathiassen 1923 (C), Soper 1923 (O,C) incl. scrap *Vaccinium uliginosum* var. *alpinum*, Polunin 1934, Bazin 1935 (O,M).
4. C. BAFFIN: c. Clyde, Polunin 1936. *Cumberland Gulf*, (Kumlien 1879, p. 165); Kingnait, Taylor 1860 (B); Pagnirtung, Soper 1924 (O,C), Malte 1927 (O,C), Polunin 1934 and 6; Kekerten, Soper 1924 (O); Blacklead Island, Soper 1924 (O); Keinooksooke, Sutherland 1846 (K)¹; Kingua (Giese ex Ambronn 1890, p. 79), Soper 1924 (O). *Nettilling Lake*, Soper 1925 (O); Camp Kungovik, Soper 1929 (O).
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Soper (Little Koukdjuak) River, Soper 1931 (O) 125744 as "*Empetrum hermaphroditum*."

¹ This locality has been variously spelt, being in the present instance as I have given it. The plant is labeled as coming from "Northumberland Inlet" and, having been included by Sutherland in his list (1852, II p. cxc), has erroneously (cf. Polunin 1936b, p. 411) been reported by Simmons (1913, p. 113) from Devon Island.

6. MELVILLE PENINSULA: c. Fury and Hecla Strait, Parry 1822 (C); Barrow River, Parry (B); Lyon Inlet, Parry 1821 (B); Duckett Cove, Parry 1821 (C). *Vansittart Island*, Danish Island, Freuchen 1922 (O,N,C) incl. 299 as "*Silene acaulis*."
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O); Burwell, Borden 1904 (O), Malte 1928 (O,C), Polunin 1931, 4, and 6; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O), Mackenzie 1886 (O), Johansen 1927 (C). *Southampton Island*, (?Lyon ex Hooker 1825b, p. 192); White Island, Mathiasen 1923 (C); South Bay, Malte 1928 (O,C), Sutton 1930 (G), Polunin 1934 and 6; Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Wager Bay, Freuchen 1922 (C); Chesterfield, Tyrrell 1893 (O), Malte 1928 (O,C), Polunin 1936, (Gardner 1937, p. 41); Eskimo Point and near, Birket-Smith 1923 (C), (Gardner 1937, p. 41).

Shepherdia canadensis (L.) Nutt.

This has recently been recorded from Chesterfield by Gardner (1937, p. 41). Despite the fact that the species grows in plenty on sandy shores at Churchill, not far to the south of our southern boundary, I have not seen material from anywhere within it, much less from as far north as Chesterfield. Accordingly, I am inclined to look upon Gardner's report as probably due to some error, and, at least for the time being, to exclude *Shepherdia* from our flora.

ONAGRACEAE

222. *Epilobium angustifolium* L., Sp. Pl. ed. 1, p. 347 (1753).

Chamaenerion angustifolium (L.) Scop.

This is the familiar Fireweed of North America—the Rose-Bay or French Willowherb of English woodland glades. According to the scheme given by Prof. Fernald (1918, pp. 1 *et seq.*), many of the plants occurring "all along the line" a little to the south of our area are either referable to or closely approach the typical form. On the other hand, most from strictly within our area are lower, with smaller and narrower leaves, and may if desired be set off as var. *intermedium* [Wormskj.] Fernald. However, this, as I have seen recently in southwest Greenland and from specimens preserved in the Botanical Museum at Copenhagen, is not the same as Wormskjold's original *Epilobium intermedium*; and as, moreover, some of the specimens even from the northernmost stations in our area come nearer to the typical form, I do not feel inclined to uphold this "measurement" variety in the present flora (cf. Porsild 1920, p. 109).

Within our area the plants do not appear to flower by any means every year, but to persist in cool summers in a weak and purely vegetative condition, perhaps not even adding much to the usually abundant underground food stores. However, now and then a handsome flowering raceme will be found, which may be anywhere up to 50 cm. high even in the northernmost localities, although here the flowers come out late and are often damaged by frost, so that ripe seed is rarely or perhaps never produced, as appears to be the case also in Greenland (Porsild 1920, p. 109).

In view of Fernald's strong but more than justified criticism (1918, pp. 6 *et seq.*) of those who unqualifiedly refer many southern specimens of this section *Chamaenerion* to a presumed hybrid between the present species and *E. latifolium*, it may be worthy of note that a specimen gathered at Churchill, where both species are fairly plentiful, was at first referred with a query to this "hybrid," because it *looked* intermediate in several of the more obvious characters. Careful examination in the herbarium showed, however, that it was really a branched and aberrant specimen of *E. angustifolium*. Similarly, during his extensive travels in southern Kamtchatka where both species are common, Dr. Eric Hultén (1929, p. 147) failed to find a single plant that gave the impression of having a hybrid origin.

General Distribution. Circumboreal; wide-ranging latitudinally, but not often truly arctic. "Nordgrense på Magerøya, 71° 10' " N. off the north coast of Scandinavia (Dahl 1934, p. 366).

E. Arctic Distribution. Fairly general in the mainland regions of Quebec and northern Labrador in the eastern half of the extreme south, and extending to Cumberland Gulf in central Baffin.

Occurrence. Generally only occasional in its limited area, and rare in Baffin. Grows in patches on sandy or other light and well-drained soils, chiefly in rather sunny and sheltered lowland surroundings, although the actual habitat is often a small raised bank or ridge.

4. C. BAFFIN: r. *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B); Pangnirtung Fiord, Turner 1934 and 5 (K), also 1936, brought in by Eskimos.
5. S. BAFFIN: r. Soper (Little Koukdjuak) River, Soper 1931 (O) 125737.
7. N. LABRADOR: f. *Chidley Peninsula*, (MacGregor ex anon. 1907, p. 80); Burwell, Borden 1904 (O) 62982,¹ Malte 1928 (O,G,C) 120110, Porsild 1930 (O*), Polunin 1936; Bowdoin Harbour, Sewall 1927 (N,C).
8. N. QUEBEC: o. Diana Bay, Knapp 1936; Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6.

223. ***Epilobium latifolium* L.**, Sp. Pl. ed. 1, p. 347 (1753).

Chamaenerion latifolium (L.) Sweet

This lovely plant, the Eskimo "Powna," is abundant in many places in our area, and varies considerably in size, branching, and such features as the colour of the hairs on the seed—which hairs may be white, yellowish, or distinctly rufescent. However, of the several forms, etc., that have been proposed, only one seems worthy of recognition in our area. This is the white or pinkish flowered plant, of which a few specimens are to be found every now and then growing with the usual purple-flowered form. It is the plant that was recently "A Tito Ulke descriptum" (Canadian Field-Naturalist 1935, p. 108) as "*E. latifolium* L. nov. subsp. *leucanthemum*." But it seems to parallel the albino form of this species and hence to be best adopted as

f. ***albiflorum*** Nathorst in Öfv. af K. Vet. Akad. Förhandl. Stockholm XIL, 1, p. 46 (1884).

¹ This is presumably the specimen that was reported by James M. Macoun (1906, p. 320) as *Epilobium spicatum*.

General Distribution. Nearly circumpolar—but absent from most of Europe, cf. map given by Fernald (1925, p. 337). Chiefly arctic and alpine. Northernmost record Floeberg Beach, 82° 27' N. on the north coast of Ellesmere (Feilden ex Hart 1880, p. 206).¹

E. Arctic Distribution. Probably complete on ice-free land except in the Far North, where it is nevertheless fairly general.

Occurrence. Although much less plentiful in some places, this is in general one of our commonest and most ubiquitous plants, and one of the most gaudy flowered. It grows chiefly in rather dry and exposed, sandy or gravelly places, but is also to be found on flood-plains and in damp and sheltered crannies among rocks. Tends to grow gregariously, spreading by strong, creeping rhizomes and often forming extensive dominant patches, which are a lovely sight when covered with blossoms. Sets abundant seed in the southern and central parts of our area, but often fails to flower in the Far North, although even here ripe seeds have been seen. Grows generally around 20 cm. high in the south, but often less than 10 cm. in the north.

1. ELLESMERE: c. but not everywhere (cf. Simmons 1906, pp. 41-2). The following specimens have been seen: Discovery Harbour or near, Hart (K,B), Greely (G); Hayes Sound, Feilden 1875 (K), Bache Peninsula, Malte 1927 (O,G,C); South Coast, Craig Harbour, Polunin 1934 and 6, Harbour Fiord, Simmons 1900 (N,K,C) 2233 2545.
2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Polunin 1934 and 6. *Somerset Island*, Parry (B), (Ross ex Hooker 1826, p. 126); "Port Kennedy" Walker ex Hooker 1861, p. 83).
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. *Cumberland Gulf*, Pangnirtung, Turner 1934 and 5 (K) incl. f. *albiflorum*, Kekerten Island, Soper 1924 (O) 111525 f. *albiflorum*, Keinooksooke, Sutherland 1846 (K).²
5. S. BAFFIN: c. everywhere—numerous records from almost all localities, incl. "Signuia" (Schuchert and White ex Holm 1900, p. 65, incl. sub nom. *Chamaenerium latifolium* β *tenuiflorum*), Amadjuak Bay, Soper 1926 (O) incl. f. *albiflorum*.
6. MELVILLE PENINSULA: c. Igloolik, Edwards (B). "Interior", (Rae 1850, p. 213); Point Elizabeth, Bangsted 1922 (C); "Lyon Inlet" (ex Hooker 1825, p. 396); Five Hawser Bay, Parry 1821 (C); near Cape Martineau, Parry (B); Duckett Cove, Parry (B)³; Repulse Bay, Hooper 1821 (L), Olsen 1922 (O,C). *Vansittart Island*, Bangsted 1923 (K,C); Danish Island, Freuchen 1922 (C); Georgina Island, Freuchen 1922 (C).
7. N. LABRADOR: c. *Chidley Peninsula* (MacGregor ex anon. 1907, p. 80); Cape Chidley, Bell 1884 (O); Burwell, Johansen 1927 (C), Malte 1927 and 8 (O,G,C), Porsild 1930 (O*), Polunin 1934 and 6; Bowdoin Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G) *pars* with *Salix reticulata*.

¹ Although this is by far the most northerly ranging member of the family, I can find no record to substantiate the claim of Ostenfeld (1926, p. 58) that it occurs nearly so far north as between 81° and 83° in East Greenland, or that of Seidenfaden and Sørensen (1937, p. 173) that it is "Circumgreenlandic".

² Cf. footnote on page 297, which applies word for word to the present plant, except that the page in Sutherland's list is in this case 189 (clxxxix) and that of Simmons' report is 114.

³ Duplicate specimen of this in Herb. Edinburgh.

8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Payne Bay, Ney and Courtright 1936; Stupart Bay, Bell (O), Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,G) incl. 120238?,¹ Polunin 1936; King George Sound, Bell 1897 (O); Sugluk, Polunin 1936; Wolstenholme, Low 1898 (O), Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1934 and 6; Digges Island, Bell 1884 (O); Cape Smith, Malte 1928 (O,G), Polunin 1936 incl. f. *albiflorum*.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). Southampton Island, South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Manning 1934, Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Fullerton, Macoun 1910 (O); Chesterfield, Freuchen 1923 (C), Malte 1928 (O,G,C), Polunin 1936, (Gardner 1937, p. 42); Rankin Inlet, Macoun 1910 (O); Cape Eskimo, Macoun 1910 (O)².

224. *Epilobium palustre* L., Sp. Pl. ed. 1, p. 348 (1753).

This is a notoriously variable species, of which a large number of subsidiary forms have been described.³ The material from within our area does not quite conform to any one of these. Moreover, although it all comes from the same general locality and obviously belongs to the same series, it exhibits within itself no slight degree of variation. Under these circumstances I think it best to refer it without qualification to the species, to which it obviously belongs, and not to complicate the situation further by describing more of these new varieties or forms, which are so often of very doubtful taxonomic worth.

At and around Chesterfield, its only district within our area, *Epilobium palustre* grows anywhere from 3 to nearly 20 cm. high, flowering and fruiting plentifully.

General Distribution. Circumboreal; widely ranging latitudinally, but not really arctic. "Nordgrense på Magerøya 71° 10-11' " N. off the north coast of Scandinavia (Dahl 1934, p. 368). According to Hultén (1929, p. 149) it reaches a similar latitude ("mouth of the Yenisei R.") in Siberia.

E. Arctic Distribution. Known only from Chesterfield and the closely adjacent Fairway Island, on the west coast of Hudson Bay in the extreme southwest.

Occurrence. Very local, but so common in its one small district that in 1936 it was noted or collected on no less than twelve separate occasions during the first day's field work in the vicinity. It grew on damp, finely comminuted soil by the margins of streams and freshwater or slightly brackish pools, often forming a dense, soft sward mixed with such species as *Stellaria crassifolia* and *Ranunculus hyerboreus*.

10. W. COAST HUDSON BAY: 1. Chesterfield, Tyrrell (O) 8954, Malte 1928 (O,G,C), Polunin 1936; Fairway Island, Dutilly 1936.

¹ In spite of what has been said above (p. 299), this particular plant may well have resulted from hybridization between *E. angustifolium* and the present species, which latter, however, it more closely simulates.

² Duplicate specimen of this in Herb. Edinburgh.

³ Already in 1884 Haussknecht (pp. 129 et seq.) had them running from α to μ .

225. *Epilobium davuricum* Fischer ex Hornem., Suppl. Hort. Bot. Hafn., p. 44 (1819).

A few of the specimens from Churchill, to the south of our area, seem to be referable to the typical form, but the rest from here are transitional to, and all from within our area attain, the reduced northern

var. *arcticum* (Samuelsson) Polunin in Jour. Bot. LXXVI, p. 101 (1938).

This plant, which is generally around 8, but may often be as little as 4 or as much as 15 cm. high when in fruit, has long passed in America as *E. anagallidifolium* (*E. alpinum*—cf. Fernald 1918b, pp. 36 *et seq.*). It is, however, generally distinguishable in being "dense caespitosa....caules basi non curvata, erecta," and such specimens as fail to show this feature of "gerade Stengelbasis" may be told from *E. alpinum* by their smaller and crisper and often more rounded leaves, and their more stocky and rigid axes. There do not seem to be any constant differences, in the structure of the seeds or in any other normally conservative features, between *E. davuricum* and its var. *arcticum* that would warrant their continued retention as separate species; they can even go through identical pedicelary changes, the flowers generally nodding but the fruit being erect in both. *E. davuricum* has not previously been recorded from within our area or from anywhere in the Arctic Archipelago, even if specimens of it have from time to time been reported under other names.

General Distribution. ? The whole species circumboreal; var. *arcticum* probably circumpolar. Northernmost record Cape Hamburg, 74° 46' N. in East Greenland (Seidenfaden ex Seidenfaden and Sørensen 1937, p. 53, sub nom. *Epilobium arcticum*).

E. Arctic Distribution. Widespread in the extreme south, including the southernmost parts of the Arctic Archipelago, but north of 65° known only from Arctic Bay, 73° 5' N. in northern Baffin.

Occurrence. Apparently rather rare (except on Southampton Island, where it is not uncommon), but so diminutive that it may have been extensively overlooked. Grows gregariously on open patches of damp, clayey soil (including *rutmark* areas), even where the surface is liable to dry up completely in late summer. Flowers and fruits abundantly and quickly; apparently calciphilous. All var. *arcticum*:

3. N. BAFFIN: r. Arctic Bay, Dutilly 1936, Polunin 1936.
5. S. BAFFIN: r. Cape Dorset, Polunin 1934 and 6.
8. N. QUEBEC: r. Wolstenholme, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 179 317 as "*E. alpinum*." *Southampton Island*, South Bay, Malte 1928 (O,C) 120697 as "*E. arcticum*," Sutton 1930 (G) as "*E. alpinum*," Polunin 1934 and 6.
10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936; Rankin Inlet, Macoun 1910 (O) 79254 as "*E. palustre*" scr. Samuelsson but rev. A. E. Porsild as "*E. arcticum*."

226. **Epilobium anagallidifolium** Lam., Encycl. Méth. II, p. 376 (1786).
E. alpinum of authors, including L. in part

A very diminutive plant, *Epilobium anagallidifolium* is common around Port Burwell and on Akpatok Island, as well as at Hebron and Port Harrison to the south of our area. From Frobisher Bay in southeast Baffin come some scraps that were distributed as *E. Hornemanni*, but whose seeds indicate that they should be referred instead to the present species, even if they must remain queried.

General Distribution. Circumboreal; chiefly subarctic and alpine. Northernmost record doubtful owing to confusion with other species, but said to reach the Taimyr Peninsula in Siberia and certainly occurring around 71° N. in the extreme north of Scandinavia (Polunin 1930, field notes—cf. also Dahl 1934, p. 367).

E. Arctic Distribution. Known with certainty only from Akpatok Island in Ungava Bay and from Port Burwell and vicinity in northern Labrador in the extreme southeast, with a doubtful extension to Frobisher Bay in southeast Baffin.

Occurrence. Plentiful in its two certain stations, growing chiefly among mosses and hepatics on damp earth by the sides of streams and in ravines or other depressions that are well covered with snow all the winter. Flowers and fruits plentifully where the snow does not melt too late. Even the fruiting axes rise scarcely at all above the surface of the ground, in contrast to the situation a little farther south.

- (S. BAFFIN: ? *Frobisher Bay*, Sewall 1927 (G) 320 as "*E. Hornemanni*".)
 7. N. LABRADOR: 1. Cape Chidley, Bell 1884 (O) 8879 *fide* Trelease; Burwell, Johansen 1927 (C) *fide* Ostenfeld, Malte 1927 and 8 (O,G,C) *fide* Malte, Polunin 1934 and 6.
 9. ISLANDS IN HUDSON, ETC., BAYS: 1. Akpatok Island, Polunin 1931 (B) 11 Nos. as "*E. alpinum*."

HIPPURIDACEAE

227. **Hippuris vulgaris** L., Sp. Pl. ed. 1, p. 4 (1753).

This well known semi-cosmopolite varies considerably in our area, especially in size and habit. Thus it can be anything from a tiny skimp less than 5 cm. high to a robust shoot exceeding 40 cm., and it also occurs in almost all its stations as the totally submerged, soft-leaved f. *fluviatilis*. This regularly changes into the typical form wherever the growing points rise out of the water, many plants showing clearly the features of both, and so it is not considered worthy of separate attention. At the other extreme, many of the specimens growing on wet mud but out of the water, especially in the south of our area, have a reduced number of unusually short and broad leaves to each whorl, so approaching a form that is perhaps fully attained at Bowdoin Harbour in southwest Baffin, and, more typically, in saline habitats at Churchill to the south of our area, viz.,

var. **maritima** (Hell.) Wahlenb., Fl. Suecica, p. 2 (1824).

This is probably identical with *Hippuris tetraphylla* L. fil. (cf. Vestergren 1907, p. 132).

General Distribution. Circumpolar; also in the southern hemisphere. All over the subarctic and lower arctic regions. Northernmost record Stormkap, 76° 49' N. in East Greenland¹ (Seidenfaden and Sørensen 1937, p. 53).

E. Arctic Distribution. Probably complete in the mainland regions of the extreme south, and fairly general in the Archipelago northwards to around the Arctic Circle. North of this recorded only from Arctic Bay in northern Baffin.

Occurrence. Fairly frequent in the extreme south; rare north of the Arctic Circle. Generally grows either partly or completely submerged in shallow freshwater pools or the margins of lakes, but can persist on wet mud out of the water. May form luxuriant beds (most often as pure stands) around the margins of tarns in sheltered situations, thus taking the place of *Eriophora* or *Carices* as pioneers in the hydrosere. Generally produces ripe fruit in plenty.

3. N. BAFFIN: r. Arctic Bay, Polunin 1936—observed under ice but not collected.
4. C. BAFFIN: r. *Cumberland Gulf*, Kekerten, Taylor 1860 and 61 (K,B*)²; Kingua, Soper 1924 (O).
5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937; Lake Harbour, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1936; Amadjuak Bay, Soper 1926 (O); Bowdoin Harbour, Sewall 1927 (C) 125 var. *maritima*.
7. N. LABRADOR: o. Cape Chidley, Bell 1884 (O); Burwell, Johansen 1927 (C), Polunin 1934 and 6.
8. N. QUEBEC: o. "Stupart Bay" (Payne ex Lawson 1887, p. 210); Digges Island, Bell 1884 (O) 8799 as "*Hippuris maritima*"; near Icy Harbour, Low 1898 (O) 23033 as "*H. maritima*"; Cape Smith, Polunin 1936 incl. 1348 apprg. var. *maritima*.
9. ISLANDS IN HUDSON, ETC., BAYS: o. *Southampton Island*, South Bay, Sutton 1930 (G), Polunin 1934, Baird 1936; *Walrus Island*, Baird 1936; *Coats Island*, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: f. Roes Welcome, Freuchen 1923 (O,C) apprg. var. *maritima*; Chesterfield, Tyrrell 1893 (O), Birket-Smith 1922 (C), Malte 1928 (O,G,C), Polunin 1936; Rankin Inlet, Macoun 1910 (O).

Cornus suecica L.

This has been reported from "Chidley Peninsula" (MacGregor ex anon. 1907, p. 80). As the species occurs only a little south of 60° N. on the west coast of Hudson Bay (See Part IV) the report may well be justified, although whether any plant has been gathered strictly within our area is very doubtful.

PYROLACEAE

228. *Pyrola secunda* L., Sp. Pl. ed. 1, p. 396 (1753).

Ramischia secunda (L.) Garcke

The material from Chesterfield within our area, and from Churchill and Hebron to the south, all belongs to the reduced and well-marked northern phase for which the name most frequently (and, it seems, correctly) adopted is

var. *obtusata* Turcz., Fl. Baicalensi-Dahurica II, 1, p. 213 (1856).

¹ I can find nothing to substantiate the claim of Ostenfeld (1926, p. 58) that the species occurs in West Greenland between 76° and 80° N. Indeed, Magister Porsild, who has spent half a lifetime in West Greenland, gave (1920, p. 111) the limit there as 70° 30' N., and now says that it should be 72° 30' N.

² There is also a specimen in Herb. Edinburgh.

The Chesterfield specimens are especially reduced—to mere depauperated relics whose 3-5 cm. long axes rise scarcely at all above the surface of the luxuriant mosses in which the rhizomes creep, but which nevertheless manage to flower and apparently to fruit in fair abundance. The species is chiefly confined to forested areas.

General Distribution. Circumboreal, the whole species wide-ranging in latitude but scarcely arctic. According to Dahl (1934, p. 374) "Nordgrense på Magerøya ca. 71°" N. It is also found at nearly the same latitude elsewhere on the north coast of Scandinavia (Polunin 1930, field notes), and possibly extends farther north in Asia, where Hultén (1930, p. 8) gives it "from the mouths of Yenisei and Lena rivers southwards. . . ."

E. Arctic Distribution. Known only from Chesterfield on the west coast of Hudson Bay in the extreme southwest.

Occurrence. Very rare and restricted—only a few plants have been found in the one locality. They were creeping in the rather dry surface of luxuriant hummocks of moss, in sheltered depressions that appeared to be well covered with snow in winter. All var. *obtusata*:

10. W. COAST HUDSON BAY: r. Chesterfield, Malte 1928 (O) 120508, Polunin 1936 No. 2155.

229. ***Pyrola grandiflora*** Radius, Diss. *Pyrola*, p. 27 (1821).

P. rotundifolia L. var. *pumila* Hornem., generally given as "Hook."

P. rotundifolia L. var. *grandiflora* (Radius) DC.

The tendency among most modern authors is to maintain this as a species separate from *P. rotundifolia*, and this I propose to do if only in deference to the opinion of the late Dr. M. O. Malte (Malte 1934, p. 182). Certainly the northern material constitutes at least a well-marked geographical variety (subspecies); to this all material from within our area belongs.

Pyrola grandiflora varies considerably in our area, not only in the shape of the calyx-lobes and in the colour of the fragrant and very lovely flowers, but also in the shape of the leaves, which may be distinctly cordate, perfectly circular, or oblong-ovate. The plants also vary in luxuriance, the leaves being small or big according to local conditions, and the axis anywhere from 3 to 15 cm. high.

General Distribution. ? Nearly circumpolar, but apparently absent from Europe. Northernmost record Cape Rutherford, 78° 49' N. on the east coast of Ellesmere (Simmons 1906, p. 40).¹

E. Arctic Distribution. Probably complete in the extreme south and general northwards to northern Baffin, but north of Lancaster Sound known only from the Hayes Sound region of Ellesmere.²

¹ Porsild (1920, p. 117) says "northern limit north of 76°" in West Greenland.

² The report by Sutherland (cf. 1852, II, p. cxc) from "Northumberland Inlet" must be transferred from Devon Island to Cumberland Gulf (See footnotes on pp. 297 and 300, and cf. Polunin 1936b, p. 411).

Occurrence. Very common in the south; rare in the Far North. Grows chiefly in rather dry areas among closed, heathy or mossy vegetation, preferring sheltered spots having a good protective snow blanket in winter. Spreads by vigorous rhizomatous growth to form large colonies. Flowers and fruits plentifully in the south, but only very sparingly in the north.

1. ELLESMERE: r. *Hayes Sound region*, Cape Rutherford, Simmons 1899 (N,K,C*) 1133; Cape Sabine, Emory 1884 (G).
3. N. BAFFIN: o. Pond Inlet and near, Borden 1904 (O), Freuchen 1924 (C) 874, Malte 1928 (O,G), Polunin 1934 and 6, Bazin 1935. *Admiralty Inlet*, Arctic Bay, Polunin 1936; Fabricius Fiord, Freuchen 1924 (C) 847.
4. C. BAFFIN: c. (Taylor 1863, p. 329); "Kivitung" (Boas ex Ambronn 1890, p. 98). *Cumberland Gulf*, Taylor 1860 (K) as "P. chlorantha", (Kumlien 1879, p. 165), (Giese ex Ambronn 1890, p. 83); Pangnirtung, Soper 1923 and 4 (O), Malte 1927 (O,C*), Polunin 1934 and 6, Turner 1934 and 5 (K); Kingua, Taylor 1860 (K,B) as "P. chlorantha", Soper 1925 (O); Keinooksooke, Sutherland 1846 (T,K) as "P. rotundifolia"¹; Nettilling Lake, Soper 1925 (O,N).
5. S. BAFFINS c. Loks Land, Palmer 1929 (P) fide Fernald, orig. as "P. asarifolia." *Frobisher Bay*, Potter 1937; Ward Inlet, Knapp 1933. *Resolution Island*, Acadia Harbour, Potter 1937; Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Johansen 1927 (C*), Malte 1927 (O,G), Soper 1931 (O), Knapp 1932, Polunin 1934 and 6; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 421); Amadjuak Bay, Soper 1926 (O); between Amadjuak and Tchark-bach Fiords, Bell 1897 (O) 18576 as "P. minor"; Cape Dorset, Robinson 1922 (G), Malte 1928 (O,G), Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. Igloodik, Parry (B) as "P. rotundifolia". "Interior", (Rae 1850, p. 214, sub nom. *P. rotundifolia*); Five Hawser Bay, Parry (B) as "P. rotundifolia"; Duckett Cove, Parry 1821 (B,C*) as "P. chlorantha."
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K) as "P. rotundifolia"; Cape Chidley, Bell 1884 (O,B), 1213 54322; Burwell, Borden 1904 (O) as "P. pumila," and seven others (O,G,N,C,D*); Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. LABRADOR: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Payne Bay, Ney and Courtright 1936; Stupart Bay, Payne 1886 (T) 50 as "P. minor"; Wakeham Bay, Johansen 1927 (C*), Malte 1933 (O,G), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6; Digges Island, Bell 1884 (O,G) 15781; opposite Digges Island, Low 1898 (O) 23013; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B) 12 Nos.; Nottingham Island, Bell 1884 (O,B) 1413 54324, Mackenzie 1886 (O), Johansen 1927 (C*); ?"Mansel Island" (ex Polunin 1938, p. 8). *Southampton Island*, South Bay, Sutton 1930 (G), Manning 1934, Polunin 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o? 'Point Look Out,' Herd (K); Chesterfield, Polunin 1936; Cape Eskimo, Macoun 1910 (O,G,N).

ERICACEAE

230. *Ledum palustre* L., Sp. Pl. ed. 1, p. 391 (1753).

The material from within our area, like most if not all from elsewhere in the New World, belongs to a form that according to Porsild (1920, pp. 118-132) and some others should be regarded as a distinct species, *L. decumbens* (Ait.) Lodd. ex Steudel, but is by most (e.g., Abbe 1936, p. 156) considered as a geographical variety (subspecies *sensu* Hultén 1930, p. 8) of *L. palustre*:

var. *decumbens* Ait., Hort. Kew. II, p. 65 (1789).

¹ The report by Sutherland (1852, II, p. exx) from "Northumberland Inlet" must be transferred from Devon Island to Cumberland Gulf (See footnote 2 on p. 305).

This "Labrador Tea" appears to vary but little within our area except in luxuriance, the plants generally being prostrate and having small leaves, but sometimes ascending to 20 cm. and having much broader leaves. Such specimens tend somewhat towards the typical form, and may have aerial axes up to 0.6 cm. thick. The plant seems always to flower and generally to fruit in abundance, even in its most northerly localities.

General Distribution. The whole species nearly circumpolar, var. *decumbens* American transgressing into eastern Asia (See Hultén 1930, p. 10). Chiefly low-arctic and subarctic. Northernmost record "somewhere north of 74°" N. in West Greenland¹ (cf. Porsild 1920, p. 129).

E. Arctic Distribution. Almost complete south of the 70th parallel, and north of it extending to northern Baffin, but not recorded north of Lancaster Sound.

Occurrence. Common in most parts of the south; local towards the northern limit of its range. Grows chiefly in dry, heathy areas that are covered with snow in winter but not drifted over so deeply that its late melting markedly reduces the growing season. Thus, especially characteristic of the sides of mounds and the upper levels of the banks of streams. Sometimes dominant over considerable areas. As with most of our other northern ground-shrubs, sprigs of it are often to be found also in adjacent marshes. All var. *decumbens*:

3. N. BAFFIN: l. Pond Inlet and near, Mathiassen 1923 (C) 793 804, and six other collectors (O,M,G,C).
4. C. BAFFIN: c. everywhere—numerous records from almost all localities, incl. Kingnait, Taylor 1860 (K,B) as "var. *angustifolia*."
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: f. ?Igloolik, Parry (B) as "*L. palustre*"; "Red Point in Hoppner Inlet" (Parry 1824, p. 83); Five Hawser Bay, Parry 1821 (C); Duckett Cove, Parry (B)² as "*L. palustre*"; Repulse Bay, Edwards (B) as "*L. palustre*."
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O,B) 1395 54245 as "*L. palustre*."
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Payne Bay, Ney and Courtright 1936; Cape Wales, Bell 1884 (O) 15646 as "*L. palustre*"; Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C) 1196, Malte 1928 (O,G,C) 120212 120218 120227, Polunin 1936; Sugluk, Malte 1927 and 33 (O,G) 126993 127003; Wolstenholme, Johansen 1927 (C) 1048, Malte 1928 (O,G,C) 120926, Polunin 1934 and 6; opposite Digges Island, Low 1898 (O) 23011 as "*L. palustre*."
9. ISLANDS IN HUDSON, ETC., BAYS: r? *Southampton Island*, South Bay, Sutton 1930 (G), Manning 1934, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: f. Wager Bay, Freuchen 1922 (O,C) 321; Whale Point, Comer 1893 (G); near Depot Island, Comer (G); Chesterfield, Tyrrell 1893 (O) 15640 as "*L. palustre*", Freuchen 1923 (O,N,K,C) 667 668 727, Malte 1928 (O,G,C) 120424, Sutton 1930 (G), Polunin 1936, (Gardner 1937, p. 42).

231. *Rhododendron lapponicum* (L.) Wahlenb., Fl. Suecica, p. 249 (1824).

This, the "Atoongowyak" of the Eskimo, is one of the most attractive and lovely of all dwarf-shrubs, at least in early summer when covered with a profusion of delicate purplish flowers. Its charm is further enhanced

¹ A specimen in the British Museum which should, according to the label, have been taken on Melville Island ("Parry I. lecta a Dom L. Hoppner") seems more likely to have been collected on Melville Peninsula during Parry's second voyage (cf. Simmons 1913, p. 116).

² Duplicate specimen in Herb. Edinburgh.

by its habit, for it grows as a spreading bushlet with "trunk" often more than 0.5 cm. thick near the base, gnarled and much branched, and rarely exceeding 10 cm. in height but flowering and fructifying early and abundantly. In spite of its wide distribution within our area, it seems to vary as little as any plant we have, my material being identical so far as can be seen with specimens from northern Scandinavia, whence Linnaeus described his original *Azalea lapponica*.

General Distribution. Circumpolar; arctic, subarctic, and alpine. Northernmost record Grenville Bay, 76° 50' N. in West Greenland (W. Elmer Ekblaw 1914, Crockerland Expedition—specimen in Gray Herbarium).

E. Arctic Distribution. Probably almost complete as far north as the Arctic Circle, except for northernmost Labrador where it has not been found, and fairly general to the south coast of Devon Island, but not recorded north of that.

Occurrence. Fairly common in the south; occasional or rare north of the Arctic Circle. Grows chiefly in rather dry and lichenous, heathy or gravelly areas, which it may dominate. Also to be found in completely desiccated, exposed places that have no snow-covering in winter, or more rarely in the drier types of marsh.

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Malte 1927 (O,G,C), Polunin 1936.
3. N. BAFFIN: o. Pond Inlet, Bazin 1935 (O,M); Arctic Bay, Polunin 1936; Fabricius Fiord, Freuchen 1924 (C).
4. C. BAFFIN: f. "Scotts Bay and Cape Searle" (Taylor 1863, p. 329); Exeter Fiord, Taylor (K). *Cumberland Gulf*, Kumlien (G), (Taylor 1863, p. 329); Pangnirtung and near, Soper 1923 and 4 (O), Malte 1927 (O), Polunin 1934 and 6, Turner 1934 and 5 (K); Nettilling Lake, Soper 1925 (O,N).
5. S. BAFFIN: f. *Frobisher Bay*. Point Brewster, Potter 1937; Ward Inlet, Knapp 1932; Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Malte 1927 and 8 (O,G,C), Soper 1931 (O), Polunin 1934 and 6; Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Soper 1926 (O).
6. MELVILLE PENINSULA: r? "Lyon Inlet" (ex Hooker 1825, p. 399); Five Hawser Bay, Parry (B).
8. N. QUEBEC: f. Diana Bay, Knapp 1936 (*1); Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,G), Polunin 1936; Sugluk, Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Sutton 1930 (G), Manning 1934, Polunin 1934 and 6.
10. W. COAST HUDSON BAY: o. Wager Bay, Macoun 1910 (O); Chesterfield, Burwash 1926 (O), Polunin 1936; south of Eskimo Point, Birket-Smith 1923 (C).

232. *Loiseleuria procumbens* (L.) Desv. in Jour. Botanique III, p. 35 (1813).

Examination of specimens from many parts of Europe, Asia, and America shows that, except for slight differences in the size of some parts—in particular the leaves—which are attributable directly to differences in the habitat, this species varies little if at all throughout its wide range.

¹ Cf. Polunin (1937c, p. 114).

Nor do I know of a single variety or form that has been so much as proposed. In our area as elsewhere it forms rather close and tough, spreading mats that rise scarcely at all above the surface of the ground. It flowers and fruits plentifully.

General Distribution. ? Probably circumboreal, but not yet recorded from western Asia. Chiefly subarctic and alpine. Northernmost record "north of 74°" N. in West Greenland (cf. Simmons 1909, p. 57).

E. Arctic Distribution. Widespread northwards to around the Arctic Circle, but not found farther north.

Occurrence. Generally rare or at least local, growing as close, low mats in lichen-covered or other "open" spots in the heath, chiefly in rather dry and sunny situations.

4. C. BAFFIN: o. *Cumberland Gulf*, anon. (S*), (Kumlien 1879, p. 165); Pangnirtung, Turner 1934 (K); Kingua (Giese ex Ambronn 1890, p. 85), Soper 1924 (O).
5. S. BAFFIN: f. Loks Land, Palmer 1929 (P). *Frobisher Bay*, Ward Inlet, Knapp 1932 (*); Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Malte 1927 (O), Soper 1931 (O), Knapp 1933, Polunin 1936; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 421, sub nom. *Chamaecistus procumbens*); Upper Savage Island, Parry (B,C) as "*Azalea procumbens*"; between Amadjuak and Tchark-bach Fiords, Bell 1897 (O).
6. MELVILLE PENINSULA: r. Repulse Bay, Parry (B).
8. N. QUEBEC: r. Diana Bay, Knapp 1936 (*¹); Wolstenholme, Polunin 1936 Nos. 1269 1276.
10. W. COAST HUDSON BAY: r. Chesterfield, Burwash 1926 (O).

233. **Phyllodoce coerulea** (L.) Bab., *Manual Brit. Bot.* ed. 1, p. 194 (1843).

Bryanthus coeruleus (L.) Dippel.

Menziesia coerulea (L.) Swartz

Andromeda taxifolia (Salisb.) Pallas

My material of this rightly named beauty seems inseparable from the European plant; nor does it vary much even in size. To the distribution map given by Rikli (1921, p. 330) must be added further localities in Baffin, Wakeham Bay and Wolstenholme in northern Quebec, Port Harrison on the east coast of Hudson Bay, around 72° N. on the east coast of Greenland (cf. Sørensen 1933, p. 98), and the Commander Islands (cf. Hultén 1930, p. 24).

General Distribution. ? Nearly circumboreal; not yet found between Maguse Lake (W. C. Güssow 1932—specimen in British Museum Herbarium) near the west coast of Hudson Bay, and the Pacific coast of North America. Chiefly subarctic and alpine. Northernmost record "somewhere north of 74°" N. in West Greenland (cf. Porsild 1920, p. 133).

E. Arctic Distribution. Apparently limited to northernmost Quebec and Labrador and the southern half of Baffin Island, in which it is fairly general, being known from a dozen localities, which stretch from Amadjuak Bay and Lake Harbour on the south coast to Cape Searle, 67° 20' N. on the east coast.

¹ Cf. Polunin (1937c, p. 114).

Occurrence. Generally only occasional within its limited area. Grows chiefly on sunny and sheltered slopes among *Empetrum* and other heaths, preferring those that have a lasting supply of water, and thus showing a marked preference for the outer zones of late-snow patches (in Lapland, where the summer is longer, it inhabits the inner zones). Grows generally about 10 cm. high, flowering and fruiting plentifully.

4. C. BAFFIN: o. "Cape Searle" (Taylor 1863, p. 329). *Cumberland Gulf*, anon. (S*), Taylor 1858 (K), (Giese ex Ambronn 1890, p. 84); Kingnait, Taylor 1860 (B).
5. S. BAFFIN: f. "Cape Haven" (Schuchert and White ex Holm 1900, p. 66); Loks Land, Palmer 1929 (P). *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937; Ward Inlet, Knapp 1932 (*); Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Johansen 1927 (C) 1130, Malte 1927, 28, and 33 (O.G.C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; Amadjuak Bay, Soper 1926 (O,N); between Amadjuak and Tchark-bach Fiords, Bell 1897 (O) 18573 as "*Bryanthus taxifolius*."
7. N. LABRADOR: r. "Port Burwell" (Borden ex Macoun in Low 1906, p. 321, sub nom. *Bryanthus taxifolius*).
8. N. QUEBEC: r. Wakeham Bay, Polunin 1936; Wolstenholme, Polunin 1936.

234. **Cassiope tetragona** (L.) D. Don in Edin. New Phil. Jour. XVII, p. 158 (1834).

Andromeda tetragona L.

This, the "Koyukta" of the Eskimo, the White or Arctic Bell-Heather of the white man, is one of the most abundant and important plants in our area, and, when in flower, quite one of the most beautiful. Except in luxuriance—it may be anything from 2 to 20 or more cm. high—it appears not to vary at all; nor do I know of any varieties that have been so much as proposed, although the species is one of wide distribution and variable habitat. In most places it forms a thick mat, but in the most exposed and northerly situations it may be reduced to tiny "tassels" that only just manage to poke their apices above the surface covering of mosses and lichens, which prove even harder than this truly arctic plant. It is highly resinous—indeed fragrantly aromatic—and widely gathered and used by the Eskimo for fuel and litter. The species grows chiefly where there is a good and lasting covering of snow in winter, being in exposed barrens largely limited to the snowdrift areas, which it characterizes so well by its luxuriant brownish growth that they can often be recognized from afar. It also forms almost always a broad zone towards the outside of the late-snow patches, and indeed helps almost everywhere to mark out any irregularities in the local topography—forming, for instance, straight lines along the angles of "raised beaches," or filling the grooves and cracks in the ground which are associated with frost action, and which are especially frequent and various in the Far North. The result of this limitation of habitat to snow-covered but not very late-melting areas, and of the prefloration period being everywhere about 3 weeks, is that almost all the plants over wide areas will flower together—and in like manner soon fade together.

The species is treated in some detail by Rikli (cf. 1914). The uppermost leaves of the shoot are not infrequently attacked by an *Exobasidium* that causes a "ballooning" malformation, generally of white or creamish colour.

General Distribution. Circumpolar; almost all over the Arctic and Subarctic. Northernmost record Low Point, 83° 6' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 234).

E. Arctic Distribution. Probably complete on ice-free land, but perhaps locally absent from some parts of northern Ellesmere.

Occurrence. Abundant almost everywhere, but only occasional in northern Ellesmere and rare in northern Labrador. Grows chiefly in rather dry situations that are well covered with snow in winter (*See above*); however, it is liable to be found almost anywhere, although growing poorly on limestone that is not well covered with humus, and scarcely ever attaining ecesis on the most exposed ridges or in the wettest marshes. Often dominant over considerable areas, generally as a dense, dark heath whose axes creep and root plentifully as they go, the ends turning up and reaching a height of about 10 cm. Flowers and fruits abundantly.

1. ELLESMERE: c. almost everywhere except the extreme north, whence only the following specimens have been seen: *Grant Land*, 82° 30' N., Bartlett 1908 (N,K,C), Lake Hazen Valley, Greely (G).
2. DEVON, ETC., ISLANDS: c. everywhere—numerous records from almost all localities.
3. N. BAFFIN: c. everywhere—numerous records from almost all localities.
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. everywhere—numerous records from almost all localities.
7. N. LABRADOR: r. Lacey Island, Potter and Brierly 1934 (G); Burwell, Polunin 1936.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all the islands.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities.

235. *Cassiope hypnoides* (L.) D. Don in Edin. New Phil. Jour. XVII, p. 158 (1834).

Andromeda hypnoides L.

Harrimanella hypnoides (L.) Coville

This is one of the most diminutive of heaths and charming of all plants—moss like, as its name implies, except when in flower. I have not been able to find any variation in material either from within or outside our area. With us it flowers and fruits abundantly and is generally 2-3 cm. high.

General Distribution. European, transgressing into eastern North America; from the Urals across Europe and Greenland to Coats Island in Hudson Bay. Northernmost record Kongsfjord (Kings Bay), 79° N. in Spitsbergen (Polunin 1933, field notes).

E. Arctic Distribution. Widespread in the southern half, from northern Labrador and Quebec to Coats Island, thence northwards through southern Baffin to Scotts Bay, lat. 71° 10' N. on the east coast.

Occurrence. Local and generally only occasional. Confined to areas well covered with snow in winter, and generally growing in the late-melting patches—most typically far in towards the centre, where the soil remains damp most of the summer and there is little but *Salix herbacea* and moss to compete with its tiny, creeping, woody axes.

4. C. BAFFIN: o. "Scotts Bay" (Taylor 1863, p. 329); Cape Searle, Taylor 1860 (K)¹. *Cumberland Gulf*, anon. (S*), (Kumlien 1879, p. 165), (Giese ex Ambronn 1890, p. 85); Kingnait, Taylor (B*); "Kekerten (Kickertine) and Niatolik (Niatoling)" Taylor 1863, p. 329)².
5. S. BAFFIN: f. Loks Land, Palmer 1929 (P). *Frobisher Bay*, York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Johansen 1927 (C), Malte 1927, 28, and 33 (O,G,C), Polunin 1936; "Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 421); Cape Dorset, Polunin 1936.
7. N. LABRADOR: f. Lacey Island, Potter and Brierly 1934 (G); Cape Chidley, Bell 1884 (O); Burwell, Borden 1904 (O), Macoun 1910 (O,G,N,C), Malte 1928 and 33 (O,G,C), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter 1937.
8. N. QUEBEC: r. Wakeham Bay, Polunin 1936; Wolstenholme, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B) 413 1594 1598; Coats Island, Porsild 1930 (O*).

236. *Andromeda Polifolia* L., Sp. Pl. ed. 1, p. 393 (1753).

The very limited material of this species from strictly within our area (for which it must be recorded as new) appears to be perfectly typical, even if it is at the northern extremity of its range and hence much reduced in stature, rising only 2-5 cm. above its mossy substratum and flowering but sparingly. However, some of the specimens from Port Harrison a little to the south, where the species is plentiful, could only with hesitation (but *fide* Fernald) be referred to it, because of the unusually short pedicels and the presence of hairs on the undersides of the leaves—characters that recall the closely related *A. glaucophylla* Link.

General Distribution. Circumboreal; widely distributed in the north but not really arctic. "Nordgrense på Magerøya, 71° 7' " N., off the north coast of Scandinavia (Dahl 1934, p. 378).

E. Arctic Distribution. Apparently limited to the shores of Hudson Bay in the western half of the extreme south, being known only from one locality in northernmost Quebec and two in Keewatin.

Occurrence. Evidently rare. At Chesterfield it grew in an unusually deep bog, its tufts of leaves rising scarcely at all above the surface of the dominant *Sphagna* in which the greater part of the plant lay buried.

8. N. QUEBEC: r. Opposite Digges Island, Low 1898 (O).
10. W. COAST HUDSON BAY: r. Chesterfield, Malte 1928 (O,C), Polunin 1936; Eskimo Point and near, Birket-Smith 1923 (C), (Güssow 1933, p. 118).

**237. *Arctostaphylos alpina* (L.) Spreng. ex L., Syst. Veg. II, p. 287 (1825).
Arctous alpina (L.) Niedenz.**

This species seems generally to be quite distinct from the next (cf. Fernald 1914, pp. 21 *et seq.*), but in the southwest of our area, where the ranges of the two coincide, the occurrence of individuals with rather large

¹ There is a duplicate specimen in Herb. Edinburgh.

² The Kekerten report is fully confirmed by a specimen that I found recently in Herb. Edinburgh.

juicy fruits and only slightly ciliate leaves leads one to suppose that some hybridization may take place between them. Especially on Southampton Island do many specimens show such intermediate traits; indeed it would there I think be possible to find "a complete chain of innumerable forms" connecting the two species (cf. Hultén 1930, p. 21, writing on *Phyllodoce*). But my visits to this interesting place (where we see also in other instances a mixing of "eastern" and "western" floral elements) have been too short to allow the extended field observations that alone would warrant the publication of such an apparently fertile "hybrid," and indeed I have not as yet seen any indubitable *A. alpina* from Southampton Island.

General Distribution. ? Circumboreal; chiefly low-arctic, subarctic, and alpine. Northernmost record Cape Giesecke, Wollaston Foreland, 74° 30' N. in East Greenland (cf. Gelting 1934, p. 146).¹

E. Arctic Distribution. Probably complete in the extreme south (except perhaps for Southampton Island) and apparently general as far north as the Arctic Circle; extending to Kivitung (Kivitoo), 67° 54' N. on the east coast of Baffin, but not known north of this.

Occurrence. Generally common. Grows chiefly on dry areas of open mineral soil or *Dryas* "heath," often forming aggressive mats a metre or more in diameter. Also in open spots in more luxuriant heaths. Flowers and fruits abundantly, but remains entirely prostrate. Leaves turn a beautiful wine-red in the autumn, but often persist for years in a withered condition, adding to the squalour of the mat that forms below.

4. C. BAFFIN: l. "Kivitung" (Boas ex Ambronn 1890, p. 98); "Exeter Sound" (Seidenfaden 1932, p. 14). *Cumberland Gulf*, anon. (S*), Kumlien 1878 (G,N), (Markham ex Macoun 1884, p. 294), (Giese, Boas ex Ambronn 1890, pp. 84 and 98); Pangnirtung, Soper 1923 and 4 (O,C), Malte 1927 (O,C), Polunin 1934 and 6; Keinooksooke, Sutherland 1846 (K)¹; Blacklead Island, Soper 1924 (O); Kingua, Soper 1924 (O) 111645 111660 atypical but *vide* Fernald; Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: c. "Cape Haven" (Schuchert and White ex Holm 1900, p. 66). *Frobisher Bay*, Point Brewster, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Lake Harbour, Johansen 1927 (C), Malte 1927 and 33 (O,G,C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; Amadjuak Bay, Soper 1926 (O,N); Cape Dorset and near, Soper 1926 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: o? *Lyon Inlet*, Edwards (B*)², Parry (B) as "*Arbutus alpina*"; Five Hawser Bay, Parry (B) 1821 as "*Arbutus alpina*."³
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O,G); Burwell, Borden 1904 (O), and six others (O,G,C,D*); Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: r? Akpatok Island, Polunin 1931 (B).
10. W. COAST HUDSON BAY: f. Roes Welcome, Freuchen 1923 (C); Whale Point, Comer 1894 (G); Chesterfield, Tyrrell 1893 (O), Freuchen 1923 (K,C) 730 731, Malte 1928 (O,G,C), Polunin 1936, Gardner (1937, p. 43); south of Eskimo Point, Birket-Smith 1923 (C).

¹ The record of Sutherland (cf. 1852, II, p. cxc) from "Northumberland Inlet" refers to Cumberland Gulf. His report from Devon Island, which has unfortunately been repeated by many authors, is accordingly erroneous (cf. Polunin 1936b, p. 411).

² It seems probable that the report of *Arctostaphylos uva-ursi* by Hooker (1825, p. 400, sub nom. *Arbutus uva-ursi*) from Melville Peninsula was based on the present species.

³ There is a duplicate specimen in Herb. Edinburgh.

238. *Arctostaphylos rubra* (Rehder and Wilson) Fernald in Rhodora XVI, p. 32 (1914).

In my material, which seems referable to this species rather than to a possible hybrid with *A. alpina* (See below), there can be seen a considerable range of variation in leaf characters—not only in the frequent presence of ciliations but also in the shape, which is generally broadly spatulate but may be quite narrowly oblanceolate. Especially long and narrow, with the apices acutish instead of rounded, are the leaves of one specimen from Port Harrison (Polunin No. 1717) just outside our area. This, too, may perhaps be of hybrid origin; it is unfortunate that the material from this district is as yet insufficient for the further study that, as Hultén (1930, p. 36) implies, seems desirable in this group.

In its only known districts within our area *Arctostaphylos rubra* grows far less luxuriantly than is the case a little to the south, for it merely forms close mats much like those of *A. alpina*. It appears to fruit less plentifully than *A. alpina*.

General Distribution. According to Fernald (1914, p. 33) "Siberia and western China; in North America known from Alaska, Yukon, British Columbia, Alberta, Keewatin, and Quebec (Anticosti Island)." To this must be added Port Harrison in Quebec and Southampton Island in the Arctic Archipelago. Northernmost record ? Bernard Harbour, 68° 47' N. on the north coast of the District of Mackenzie (Frits Johansen, Canadian Arctic Expedition of 1913-18—a somewhat doubtful specimen in Herb. Ottawa, previously cited as *A. alpina*).

E. Arctic Distribution. Known only from Chesterfield on the west coast of Hudson Bay and from Southampton Island, where with various intermediate forms it appears to take the place of *A. alpina*, as has already been mentioned under that species.

Occurrence. Rare at Chesterfield, but common on Southampton Island, which is predominantly calcareous (cf. Fernald *l.c.* p. 24, but contrast Malte 1934, p. 183), and where it grows much like *A. alpina* in dry areas of heath on open mineral soil.

9. ISLANDS IN HUDSON, ETC., BAYS: 1. *Southampton Island*, (?Lyon ex Hooker 1825b, p. 192, sub nom. *Arbutus alpinus*); South Bay, Malte 1928 (O,G,C) incl. as "*A. alpina*", Sutton 1930 (G) *vide* Raup and Fernald, Manning 1934, Polunin 1934 and 6, Baird 1936.

10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936.

239. *Vaccinium uliginosum* L., Sp. Pl. ed. 1, p. 350 (1753).

Myrtillus uliginosus (L.) Drej.

Although most of my material belongs to the northern *microphyllum* series, which is almost specifically distinct (See Hagerup 1933), a few of the specimens from Churchill, Port Harrison, and Hebron, to the south of our area, are referable to the head form, and a few others to its pubescent-leaved phase. The plant is very variable also within our area. Thus in

some sheltered valleys in the south there occur tall bushy forms with large leaves that come close to the macrophyllous head form, although the material must all be referred to the usual northern

var. **alpinum** Bigel., Fl. Bost. ed. 2, p. 153 (1824).
(*Vaccinium uliginosum* L. subsp. *microphyllum* Lange.)

Although this varies considerably in habit and in the shape as well as the size of the leaves and berries, only one phase seems worth distinguishing. This is a pubescent-leaved form that although relatively uncommon is probably to be found almost everywhere in our area that a proper search is made. It parallels the one in the macrophyllous series,¹ and like it cannot be maintained as a variety of equal status with the normal microphyllous variety, but merely as the subsidiary

var. **alpinum** Bigel. f. **Langeanum** (Malte) n. comb.
(*Vaccinium uliginosum* L. var. *Langeanum* Malte in Rhodora XXXVI, p. 184 (1934).)

Vaccinium uliginosum var. *alpinum* is one of the outstanding plants over much of our area, giving the most brilliant tints to the hillsides in autumn, the most delicious fruits to all around, and often dominating considerable areas of sheltered country.

General Distribution. Circumpolar; almost all over the Arctic and Subarctic. Northernmost records Deserted Village (Eskimopolis) (Hart 1880, p. 236) and Lastraea Valley (Simmons 1899—specimen in Copenhagen Herbarium), both 78° 52' N. in Ellesmere.

E. Arctic Distribution. Surely complete all over the southern half, and fairly general as far north as the Hayes Sound region of Ellesmere, but not recorded from the extreme north.

Occurrence. Generally abundant, except in the Far North where it is local. In the south it grows almost everywhere, being an important constituent of most heaths and also occurring in marshes and open gravelly areas, for it has a wide range of tolerance to most environmental factors. Farther north it becomes more and more restricted to the most favourable, south-facing and sheltered slopes, which are well covered with snow in winter and remain fairly moist most of the summer. Here it may grow in the snow-patches with *Cassiope*, or it may form its own dominant zone outside the latter, its areas being especially noticeable in the autumn when the leaves become a magnificent blood-red before dropping off. Except in the Far North it flowers and fruits plentifully, generally growing as spreading mats 5-15 cm. high, although in the most favourable situations it may be considerably taller and more bushy. The leaves are frequently attacked by *Exobasidium Vaccinii-uliginosi*. All var. *alpinum*:

1. **ELLESMERE:** 1. *Hayes Sound region*, Deserted Village (Hart 1880, p. 236); Lastraea Valley, Simmons 1899 (K,C) 840; Twin Glacier Valley, anon. 1876 (K) as "*Vaccinium uliginosum*"; Buchanan Bay (Turnstone Beach), Feachem 1937; Cape Rutherford, Simmons 1898 (N) 304; "Fram Harbour" (Simmons 1906, p. 38). *South Coast*, Harbour Fiord, Simmons 1900 (G) 2226; "Musk-ox Fiord" (Simmons 1906, p. 38).

¹ *Vaccinium uliginosum* L. f. *pubescens*, n. comb. (*V. uliginosum* L. var. *pubescens* ("Hornem.") Lange, Conspectus Florae Groenlandicae, Pars secunda, p. 268 (1887).)

2. DEVON, ETC., ISLANDS: f? *Devon Island*, Dundas Harbour, Soper 1923 (O,C) 111653, Malte 1927 (O,C), Polunin 1934 and 6. ?*Cornwallis Island*, Assistance Bay, Sutherland (K).
3. N. BAFFIN: f. Pond Inlet and near, Lyall 1854 (K) as "*Vaccinium uliginosum*," and six others (O,M,G,C), incl. Polunin 1934 and 6 incl. 652 f. *Langeanum*. *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O,C) 111654; Arctic Bay, Polunin 1936 incl. 2549 f. *Langeanum*; Gifford Fiord, Mathiasen 1922 (C).
4. C. BAFFIN: c. everywhere—numerous records from almost all localities.
5. S. BAFFIN: c. everywhere—numerous records from almost all localities.
6. MELVILLE PENINSULA: c. "Fury and Hecla Strait" (ex Hooker 1825, p. 399); Lake Tasersuaruseq, Mathiasen 1922 (C). *Lyon Inlet*, Parry (B) as "*Vaccinium uliginosum*"; Five Hawser Bay, Parry 1821 (C*)¹; Duckett Cove, Parry 1821 (B,C*); Repulse Bay (ex Hooker 1825, p. 399), Olsen 1922 (C). *Vansittart Island*, Freuchen 1922 (O); Danish Island, Freuchen 1922 (C).
7. N. LABRADOR: c. everywhere—numerous records from almost all localities, incl. Polunin 1931, 4, and 6 incl. 453 f. *Langeanum*.
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: c. everywhere—numerous records from almost all localities.
10. W. COAST HUDSON BAY: c. everywhere—numerous records from almost all localities.

240. *Vaccinium Vitis-Idaea* L., Sp. Pl. ed. 1, p. 351 (1753).

All the material from within our area, and indeed all from North America (including Greenland) belongs to

var. **minor** Loddiges, Bot. Cab. XI, tab. 1023 (1826).
(*Vaccinium Vitis-Idaea* L. var. *pumilum* Hornem.)

This with us is generally less than 5 cm. high, although occasional specimens, growing among luxuriant closed vegetation in sheltered situations, may straggle to a height of nearly 10 cm. The margins of the leaves often appear to be serrate.

General Distribution. The whole species circumpolar, with a wide distribution in the north, but not really arctic. Northernmost record probably Bushnan Island, 76° N. off the west coast of Greenland (Sutherland 1852, II, p. cxc, but See also Porsild 1920, p. 135).

E. Arctic Distribution. Probably complete in the extreme south and fairly general northwards nearly to the Arctic Circle,² but not found north of that.

Occurrence. Occasional to locally common in the extreme south; rare north of 65° N. Grows chiefly on dry but luxuriant heathy areas among other dwarf-shrubs, also on the drier mossy hummocks in bogs. At least as far north as southern Baffin it appears always to flower and fruit plentifully, the berries as in Lapland being best to eat when the snow leaves them in spring. All var. *minor*:

4. C. BAFFIN: r. *Cumberland Gulf*, Pangnirtung, Turner 1934 (K); Kassigidjen Fiord, Soper 1924 (O); Nettilling Lake, Soper 1925 and 6 (O).

¹ Specimen seen in Herb. Edinburgh.

² Although this species was found in the Upper Savage Islands by Dr. Robert Bell as long ago as 1884, the specimen was not cited individually by Macoun (cf. 1886), with the result that as recently as 1913 Simmons could find no record of it from the Arctic Archipelago.

5. S. BAFFIN: c. *Frobisher Bay*, Palmer 1929 (P); Point Brewster, Potter 1937; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Johansen 1927 (C) 1128, Malte 1927 and 8 (O,G,C), Polunin 1934 and 6; Upper Savage Island, Bell 1884 (O) 54016¹; Amadjuak Bay, Soper 1926 (O); Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Soper 1926 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: r. 'Hall Island', Freuchen 1923 (C) 642 "Favourite admixture to tobacco" scr. Freuchen.
7. N. LABRADOR: f. Lacey Island, Potter and Brierly 1934 (G); Cape Chidley, Bell 1884 (O) 15465; Burwell, Johansen 1927 (C) 1251, Malte 1928 (O,C), Polunin 1934 and 6; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936; Stupart Bay, Payne 1886 (T) 53; Wakeham Bay, Johansen 1927 (C) 1194, Malte 1933 (O,G), Polunin 1936; King George Sound, Bell 1897 (O) 18759; Sugluk, Polunin 1936; Wolstenholme, Johansen 1927 (C) 1046, Polunin 1934 and 6; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B). *Southampton Island*, South Bay, Sutton 1930 (G), Polunin 1936; Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o. Wager Bay, Freuchen 1922 (C) 325; Chesterfield, Freuchen 1923 (O,C) 665 666 694, Malte 1928 (O,G), Polunin 1936, (Gardner 1937, p. 44).

Vaccinium Myrtillus L.

The Whortleberry cannot be upheld as likely to grow in our area. The only report is by Hooker (1825b, p. 192), who wrote "Of this plant there is but a single leaf [in the collection of Capt. Lyon], which was found on an iceberg in the middle of Hudson's Strait, along with some foliage of a *Quercus*".

DIAPENSIACEAE

241. *Diapensia lapponica* L., Sp. Pl. ed. 1, p. 141 (1753).

My specimens of this beautiful plant seem inseparable from the European; nor do they vary at all so far as I can see. They generally consist of a close, domed tussock some 5 cm. in diameter and 2-3 cm. high, from which project for another 2-3 cm. the rather plentiful scapose axes.

General Distribution. Circumboreal. Chiefly low-arctic and alpine, but having one isolated high-arctic station at Discovery Harbour, 81° 43' N. in Ellesmere (Jewell ex Greely—specimen in the Gray Herbarium)².

E. Arctic Distribution. Fairly general in the extreme south and, except for Melville Peninsula where it has not yet been found, as far north as Kivitung (Kivito), 67° 54' N. on the east coast of Baffin. Reappearing in northern Ellesmere (*See above*).

¹ Cf. footnote 2 on p. 316.

² There can scarcely be any doubt about this record, even if Greely (1886, II, p. 391) wrote "Only a single specimen of this plant was found, and Sergeant Jewell, the collector, was unable to give exact information as to its habitat". This specimen (or at least part of it) is in the Gray Herbarium, labelled in the handwriting of Asa Gray with the usual formula he attached to specimens collected on Greely's expedition, viz., "Grinnell Land. Lt. A. W. Greely. Lady Franklin Bay Expedition". It had been preserved in the flowering condition when fresh—i.e., it was not discovered in a pocket after being picked up elsewhere.

Occurrence. Fairly frequent, and may be abundant quite locally. Grows chiefly in open sunny spots in heaths and on exposed barrens, where the snow is blown away and the plants must frequently be uncovered in the winter. Flowers and fruits abundantly.

1. ELLESMERE: r. Discovery Harbour, Jewell (G).
4. C. BAFFIN: f. "Kivitung" (Boas ex Ambronn 1890, p. 97); Cape Searle, Taylor 1860 (K); Exeter Fiord, Taylor (K). *Cumberland Gulf*, Kumlien 1878 (G,N), (Giese, Boas ex Ambronn 1890, pp. 83 and 97); Pangnirtung, Soper 1923 and 5 (O), Malte 1927 (O,G,C), Polunin 1934 and 6, Turner 1935 (K); Kingnait, Taylor 1861 (specimen in Herb. Edinburgh).
5. S. BAFFIN: f. (Tarr ex Rowlee and Wiegand 1897, p. 421); "Signuia" (Schuchert and White ex Holm 1900, p. 66); Loks Land, Palmer 1929 (P). *Frobisher Bay*, York Harbour, Potter 1937; Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Johansen 1927 (C), Malte 1927 and 8 (O,G,C), Polunin 1936; Upper Savage Island, Parry (B), Bell 1884 (O,B).
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O,G); Burwell, Borden 1904 (O), Macoun 1910 (O,G,N,C), Malte 1928 and 33 (O,G,N,C), Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. Diana Bay, Knapp 1936; Stupart Bay, Payne 1886 (T); Joy Bay, Johansen 1927 (C*); Wakeham Bay, Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1934 and 6; opposite Digges Island, Low 1898 (O).
9. ISLANDS IN HUDSON, ETC., BAYS: r? Akpatok Island, Polunin 1931 (B); Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936.

PRIMULACEAE

242. *Primula stricta* Hornem. in *Flora Danica* VIII, tab. mcccclxxxv (1810).

P. farinosa of authors

As confirmed by Professor Fernald (1928, p. 66) in his excellent revision "*Primula* § *Farinosae* in America", this species was first found in our area by Low in 1898, although his plants were distributed, like many others of this group, as "*P. farinosa*." In 1936 it was found in two other localities in the same general region as Low's, as well as "all along the line" to the south of our area. The plants vary somewhat in size and robustness, but although those from within our area are often only about 5 cm. high when flowering, and rarely more than 20 cm. high when fruiting, they do not seem to constitute a taxonomically separable unit (cf. Fernald 1928, p. 67). They must, however, be mentioned as having in some instances a rather unusual amount of farinosity about them.

General Distribution. Circumboreal, chiefly subarctic. Northernmost record Primulabugt (i.e., Primula Bay), 73° 46' N. in East Greenland (Seidenfaden 1930, p. 374).

E. Arctic Distribution. Apparently limited to the western half of the mainland of Quebec, in the centre of the extreme south.

Occurrence. Rare, but gregarious. At Sugluk it grew beneath scrubby bush-willows, on the sandy bank of a narrow gully that must be deeply covered over with snow every winter. At Cape Smith it grew on sparsely vegetated clay plains by the side of a (brackish?) lake. It flowered abundantly and appeared to set ripe seed.

8. N. QUEBEC: r. Sugluk, Polunin 1936 Nos. 1516 1517 1528; River Kovik, Low 1898 (O) 23025 *fide* Fernald; Cape Smith, Polunin 1936 Nos. 1302 1304 1336.

243. ***Primula egaliksensis*** Wormskj. in Flora Danica IX, tab. mdxi (1816).
P. sibirica of authors

This more slender but equally beautiful species often grows in company with the last, and like it was first discovered in our area by A. P. Low in 1898 and found again by me in 1936. Wormskjold's typical form with white flowers, which I recently saw growing in its original locality in southwest Greenland, occurs in small numbers at Cape Smith within our area, and more plentifully at Churchill farther south, but most of the specimens from strictly within our area belong to

f. ***violacea*** Fernald in Rhodora XXX, p. 98 (1928).
(*P. stricta* var. *groenlandica* Warming.)

P. egaliksensis flowers abundantly within our area and, to judge from the plentiful dehiscent and empty capsules still standing from the year before, must also fruit successfully. It would be no great surprise to find one or both of our species of *Primula* in southern Baffin some day. In our area *P. egaliksensis* is generally from 5 to 15 cm. high, although it may be as little as 3 cm. when flowering.

General Distribution. According to Fernald (1928, p. 97) "Southern Greenland and Labrador to Alaska, south to northern Newfoundland, eastern Quebec....and British Columbia." Northernmost record doubtful owing to confusion with other species, but at least as far north as "Itivnek, Holsteinsborg Distr.," c. 67° N. in West Greenland (Warming and Holm ex Fernald 1928, p. 99).

E. Arctic Distribution. Known only from two localities on the east coast and one on the west coast of Hudson Bay, in the extreme south of our area.

Occurrence. Rare, but gregarious. At Cape Smith it grew very locally in considerable numbers mixed with the last species, in the shelter of boulders on sparsely vegetated clay plains by the side of a lake. The area, although well back from the sea, was only a metre or two above high-tide level, so the soil may have been somewhat saline as a result of relatively recent emergence and of blowing in of seaweeds or pieces of sea ice with salt enclosures.

8. N. QUEBEC: r. River Kovik, Low 1898 (O) 23026 f. *violacea* *fide* Fernald; Cape Smith, Polunin 1936 Nos. 1310 1314 typical form, and 1302 1308 1324 f. *violacea*.

10. W. COAST HUDSON BAY: r. Tikerarjuaq south of Eskimo Point, Birket-Smith 1923 (C) 1036.

244. *Androsace septentrionalis* L., Sp. Pl. ed. 1, p. 142 (1753).

I have never found this species growing within our area, but the specimens therefrom that I have before me¹ appear to be inseparable from European material of the typical form, or, more strictly, a reduced phase of it that scarcely seems deserving of a separate name. These specimens are from 4 to 10 cm. high and flowering; they appear to set ripe seed. Also referable to the typical form are, I think, my specimens collected at Port Harrison, to the south of our area, in 1936. On the other hand, the specimens from Churchill, on the opposite side of Hudson Bay, clearly belong to a different variety, although not to the one to which they were referred by St. John (1922, p. 48), as Dr. St. John now agrees (See Part IV of the present series).

General Distribution. Circumboreal; wide-ranging latitudinally, including some high-arctic lands. Northernmost record Discovery Harbour, 81° 43' N. in Ellesmere (Feilden 1876, specimen in Kew Herbarium; Hart 1876 and Greely 1883, specimens in Gray Herbarium).

E. Arctic Distribution. Known only from the Lady Franklin Bay district of northern Ellesmere and from Pond Inlet in northern Baffin, but probably occurring elsewhere, as it is widespread to the south and west.

Occurrence. Apparently very rare except in northern Ellesmere, where it grows chiefly in open areas of (probably calcareous) clay or gravel.

1. ELLESMERE: 1. *Lady Franklin Bay*, Discovery Harbour, Feilden 1876 (K), Hart 1876 (G,B?), Greely 1883 (G); "Mount Cartmel" (Hart 1880, p. 238); "Bellot Island" (Hart 1880, p. 238).
3. N. BAFFIN: r. Pond Inlet, Bazin 1935 (O,M).

PLUMBAGINACEAE

245. *Armeria labradorica* Wallr., Beitr. I, p. 185 (1842).

A. vulgaris of authors

Statice labradorica (Wallr.) Hubbard and Blake

It has been agreed by the Nomenclature Committee appointed by the Fifth International Congress to recommend that *Statice* be discarded as a *nomen confusum*; hence my use of *Armeria* as a generic name. According to Blake (1917, pp. 1 *et seq.*) and Malte (1934, pp. 184 *et seq.*), all the material from within our area is to be separated as *A. labradorica* and not referred to *A. arctica*, *A. maritima*, *A. sibirica*, or *A. vulgaris*, as has been variously done by different authors. However, as was already forecast by Malte (1934, p. 186), it now proves impossible to uphold the varieties *genuina* and *submutica* proposed by Blake, as they not only show, as the latter admits (1917, p. 4), an "entirely intergradient plexus of short-cuspidate to acuminate forms," but even vary considerably in this one and

¹ One of these, discovered among specimens of *Draba fladnizensis* in the Department of Botany at McGill University, is from Baffin, to which the species must be mentioned as new. It helps to fill what previously appeared to be a large gap in the distribution, between Victoria Island, Hudson Bay, and northern Ellesmere. Also notable in a sheet in the Gray Herbarium from northwest Greenland (W. Elmer Ekblaw 1915, Crockerland Expedition: region of Etah, 78° 20' N.), as the species was not previously known to occur anywhere in Greenland.

only "key" character in different florets from the same head. Our material is, however, separable into two forms which, even if they intergrade and occasionally grow together, seem worthy of recognition as

- (1) f. **glabriscapa** (Blake) Malte in *Rhodora* XXXVI, p. 185 (1934).
- (2) f. **pubiscapa** (Blake) Malte in *Rhodora* XXXVI, p. 185 (1934).

Of these f. *pubiscapa* is the more common; but both occur throughout the range of the species in our area and so are not separated in the citations given below.

Armeria labradorica varies also considerably in luxuriance within our area, although the scapes are generally between 10 and 20 cm. tall. Fructification is always plentiful in the south, but seems to be somewhat deficient in the northernmost stations.

General Distribution. ? Eastern half of North America from Greenland and the Arctic Archipelago to Newfoundland, Quebec, and the Northwest Territories. Northernmost record 78° 20' N. in the "Region of North Star Bay," northwest Greenland (W. Elmer Ekblaw 1914, Crockerland Expedition—specimen in Gray Herbarium).¹

E. Arctic Distribution. General (at least throughout the coastal regions) in the south and as far north as northern Baffin, thence widespread to the south coast of Ellesmere, but not known north of that.

Occurrence. Fairly common in most places; generally gregarious. To be found here and there in open spots in the heath and in the drier parts of marshes, both near the sea and at least some miles back from the coast. Also grows on open clay and gravel plains.

1. ELLESMERE: r. Fram Fiord, Simmons 1899 (N,K,C) 1625 as "*Statice maritima* var. *sibirica*."
2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Malte 1927 (O,G,C) 119107, Polunin 1934.
3. N. BAFFIN: o. Pond Inlet and near, Mathiassen 1923 (O,C) 756 as "*Statice Armeria* var. *sibirica*," and five others (O,M,C); Arctic Bay, Malte 1927 (O), Polunin 1936.
4. C. BAFFIN: o. Cape Searle, Taylor 1860 (K,B). *Cumberland Gulf*, Kumlien 1878 (N) 1053; Pangnirtung, Soper 1923 (O,C) 111659 111660 111661 as "*Statice Armeria* var. *sibirica*," Polunin 1934; Kekerten Island, Kumlien (G).
5. S. BAFFIN: c. almost everywhere—numerous records from many different localities, incl. Loks Land, Palmer 1929 (P) 642389 as "*Statice Armeria*."
6. MELVILLE PENINSULA: o. *Lyon Inlet*, Hooper 1821 (L); Five Hawser Bay, Parry 1821 (B,C); Duckett Cove, Parry 1821 (C); Repulse Bay, Parry 1821 (B*,C).
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 62199; Burwell, Borden 1904 (O) 62012 as "*Armeria sibirica*," and six others (O,G,N,C,D*) incl. as "*Armeria maritima*," "*Armeria vulgaris* var. *labradorica*," and "*Statice Armeria* var. *sibirica*."

¹ I can find no confirmation of the claim of Ostenfeld (1926, p. 63) that "*Armeria vulgaris* var. *sibirica*" occurs in East Greenland between 81° and 83° N., even if Seidenfaden and Sørensen (1937, p. 176) have recently given the northern limit in East Greenland as "ab. 81°".

8. N. QUEBEC: c. everywhere—numerous records from almost all localities, incl. Wakeham Bay, Johansen 1927 (C) 1202 as "*Statice Armeria* var. *sibirica*", Wolstenholme, Johansen 1927 (C) 1049 as "*Statice Armeria* var. *sibirica*."
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 227 410 1027 1221 1229 as "*Statice Armeria*." *Southampton Island*, South Bay, Sutton 1930 (G), Manning 1934, Polunin 1936.
10. W. COAST HUDSON BAY: f. Chesterfield, Tyrrell 1893 (O) 62203, Freuchen 1923 (O,C) 664 as "*Statice Armeria* var. *sibirica*," Malte 1928 (O,G,C), Polunin 1936, (Gardner 1937, p. 44, sub nom. *Statice Armeria* and f. *sibirica*); Eskimo Point and near, Macoun 1910 (O) 79342 as "*Armeria sibirica*," Birket-Smith 1923 (C) as "*A. vulgaris* var. *sibirica*," Cope 1934 (I,P) as "*Statice Armeria*."

GENTIANACEAE

246. *Lomatogonium rotatum* (L.) Griseb. ex Nyman, Consp. Fl. Eur. III, p. 500 (1881).

Swertia rotata L.

Pleurogyne rotata (L.) Griseb.

I cannot help feeling just a little doubtful about the only record of this species from within our area. The label reads "Chesterfield 13 août 1933, Le long des ruisseaux," suggesting that it grew in plenty. But Gardner (1937, cf. p. 44) fails to substantiate it in print, and Dr. Malte never found it; moreover, in 1936 Bishop Turquetil, the Rev. Father A. Dutilly, and I were likewise unable to confirm the record. Finally, although the climate at Chesterfield is much harder, with summer shorter and coming later and growth of almost all species noticeably poorer than at Churchill, the 13 août specimens of this *annual* plant were as tall as the very tallest to be found at Churchill, in one case exceeding 30 cm. in height—all of which suggests the possibility of some unfortunate clerical error or mixing of labels. Nevertheless, it seems permissible to include the species in our flora, especially as it grows so plentifully and luxuriantly at Churchill as to suggest that it will probably be found far north of that point in the future. The plants of the one collection are both flowering and fruiting, some of the capsules containing ripe seeds. They belong to the typical form (cf. Fernald 1919b, pp. 193 *et seq.*).

General Distribution. Circumboreal; chiefly subarctic and alpine—See map given by Fernald (1925, p. 339), but cf. Hultén (1930, pp. 67-8). Northernmost record Christianshaab, 68° 47' N. in West Greenland (Rink ex Porsild 1920, p. 139). Also exceeding the Arctic Circle in Mackenzie (R. M. Anderson, specimen in Herb. Ottawa), the Kola Peninsula, and continental Russia.

E. Arctic Distribution. One somewhat doubtful record (*See above*) from the west coast of Hudson Bay in the extreme southwest.

Occurrence. Very rare, and not seen by me within our area. At Churchill, where it is common, the species grows gregariously on damp, clayey areas by the sides of brackish lagoons left in the construction of the settlement, and less frequently in estuarine salt-marshes far from man's influence.

'W. COAST HUDSON BAY: ? Chesterfield, Gardner 1933 (G.).

BORAGINACEAE

247. *Mertensia maritima* (L.) S. F. Gray, Nat. Arrang. Brit. Pl. II, p. 354 (1821).

Pneumaria maritima (L.) Hill

Lithospermum maritimum (L.) "Hook."

All the material from within our area must, as I have long thought, be set apart as belonging to a well-marked northern variety, which is clearly the plant referred to by Thore Fries as "*β. tenella*," and which we may, accordingly, take up as

var. *tenella* Fries in Öfv. af Kongl. Vet-Akad. Förh. Stockholm, p. 127 (1869).

Fries gave no formal diagnosis of this, but his introduction, translated from the Swedish, runs as follows, "The Spitsbergen form deserves a varietal name of its own: *β. tenella*, distinguished from the head form through its smallness and in all ways greater slenderness. It is often no more than 3 cm. long, but other examples up to 20 cm. long are nevertheless also to be found." Occasionally there are to be found in the south of our area specimens having shoots up to 30 cm. long; but they all preserve the small and rounded, broadly spatulate leaves and other features of var. *tenella*.

General Distribution. According to Hultén (1930, p. 86) "the entire species: American, transgressing into western Europe and eastern Asia." Wide-ranging in latitude, but chiefly arctic and subarctic. Northernmost record Sonntag Bay, 78° 20' N. in the region of Etah, northwest Greenland (W. Elmer Ekblaw 1914, Crockerland Expedition—specimen in the Gray Herbarium).

E. Arctic Distribution. General and perhaps almost complete around coasts as far north as Lancaster Sound, but not found north of the south coast of Devon Island.

Occurrence. Generally common in saline habitats by the sea, but never found inland. Grows chiefly on well-drained, sandy or gravelly shores a little above high-water mark. Rarely absent from suitable habitats in the south, but far less plentiful in the north. Forms beautiful rosettes whose prostrate axes exhibit a remarkably uniform radial growth and flower abundantly. All var. *tenella*:

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934.
3. N. BAFFIN: l. Pond Inlet and near, Mathiassen 1923 (O,C), Soper 1923 (O,C), Freuchen 1924 (C), Joy 1924 (O), Polunin 1934, Bazin 1935 (O,M).
4. C. BAFFIN: o. Cape Searle, Taylor 1860 (K,B). *Cumberland Gulf*, Pangnirtung, Malte 1927 (O,G,C), Polunin 1934 and 6, Turner 1934 (K).
5. S. BAFFIN: c. "Signuia" (Schuchert and White ex Holm 1900, p. 66); Loks Land, Palmer 1929 (P). *Frobisher Bay*, Point Brewster, Potter 1937; Ward Inlet, Knapp 1932; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O,G); Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Burwash 1924 (O), Soper 1926 (O), Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. 'Frozen Strait,' Parry (B)¹; Repulse Bay, Olsen 1922 (C).

¹ Duplicate specimen in Herb. Edinburgh.
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7. N. LABRADOR: o. *Chidley Peninsula*, MacGregor 1905 (K); Burwell, Johansen 1927 (C).
8. N. QUEBEC: c. Diana Bay, Knapp 1936; Cape Wales, Bell 1884 (O); Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1927, 28, and 33 (O,G,C), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Low 1898 (O), Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1934 and 6.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Nottingham Island, Bell 1884 (O), Mackenzie 1886 (O), Johansen 1927 (C). *Southampton Island*, northeast coast, Mathiasen 1922 (C); South Bay, Sutton 1930 (G).
10. W. COAST HUDSON BAY: c. Island south of Wager Bay, Freuchen 1923 (O,C); Whale Point, Comer 1894 (G), Freuchen 1923 (C); Depot Island, Comer 1893 (O,G,K), Freuchen 1923 (N,K,C); Chesterfield, Gardner 1933 (G), Polunin 1936; south of Eskimo Point, Birket-Smith 1923 (C).

SCROPHULARIACEAE

248. *Veronica alpina* L., Sp. Pl. ed. 1, p. 11 (1753).

The material of this species from southern Baffin, where it is not infrequent in Frobisher Bay, belongs to the typical form, as has already been indicated by Dr. Pennell (1932, p. 150, and 1935, p. 584). So, too, may be referred my specimens collected on Akpatok Island in 1931 and some of those from Port Burwell; also one from Port Harrison (Polunin 1936, No. 1787) south of our area. The majority from within our area and almost all from south of it belong, however, to the coarser and more pubescent series, which alone represents the group throughout most of North America. This is by some (e.g., Pennell 1921, p. 15) kept specifically distinct from *V. alpina* s. str. But it certainly "runs into" the latter in our area and altogether seems best considered as a mere variety, in which category the oldest name appears to be

var. *unalaschkensis*¹ Cham. and Schl. in *Linnaea* II, p. 556 (1827).
(*Veronica Wormskjoldii* Roem. and Schult.; *V. alpina* var. *villosa* Lange.)

Altogether, hairiness is a very variable character in this group, it being possible in our area and also in southwest Greenland to construct a complete chain of forms connecting var. *unalaschkensis* with the true *V. alpina*, which itself may be almost glabrous. The plants also vary in the shape and outline of the leaves, which may be quite conspicuously dentate, ciliate, or entire—the last chiefly in the most sheltered snowdrift areas.

General Distribution. The entire species across Europe and North America from Lapland and the Alps to Alaska. Chiefly subarctic and alpine. Northernmost record Antarctic Harbour, c. 71° 58' N. in Scoresby Land, East Greenland (Vaage 1932, p. 48).

E. Arctic Distribution. Apparently limited to the eastern half of the extreme south, where it is known from northernmost Quebec and Labrador and from Akpatok Island and southeast Baffin.

Occurrence. Local or rare except in the extreme north of Labrador, where it is fairly common. Grows only in sheltered areas having a deep

¹ Originally spelt "unalaschensis".

covering of snow in winter—chiefly among other herbs in late-snow patches, where it generally manages to flower and often (but not always) to fructify. Usually about 8, and never observed exceeding 12, cm. in height in our area.

5. S. BAFFIN: 1. *Frobisher Bay*, Sewall 1927 (P) 319 (641936) typical form; Ward Inlet, Knapp 1932 (*); York Harbour, Potter 1937 typical form.
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K) var. *unalaschkensis*; Cape Chidley, Bell 1884 (O) 17759 var. *unalaschkensis*; Burwell, Borden 1904 (O) 63033 var. *unalaschkensis*, Hantzsch 1906 (D*), Johansen 1927 (C) 1257 var. *unalaschkensis*, Malte 1927 and 8 (O,G,C) 119183 typical form—also var. *unalaschkensis*, Porsild 1930 (O), Polunin 1931, 4, and 6 Nos. 1089 2629 typical form and 445 448 1102 var. *unalaschkensis*; Bowdoin Harbour, Potter and Brierly 1934 (G) var. *unalaschkensis*; Grenfell Tickle, Potter and Brierly 1934 (G) 3531 var. *unalaschkensis*.
8. N. QUEBEC: r. Mosquito Bay, Low 1898 (O) 23030 var. *unalaschkensis*.
9. ISLANDS IN HUDSON, ETC., BAYS: 1. Akpatok Island, Polunin 1931 (B) typical form incl. 1247 1256 as "*Ammodenia peploides*."

249. ***Castilleja pallida*** s.l. ((L.) Spreng. ex L., Syst. Veg. II, p. 774 (1825)).

Taken in the broad sense this is an atrocious *typus polymorphus*; treated otherwise it becomes a whole series of supposed species and subspecies which, at least to those who like myself are unable to understand them, appear to intergrade so freely as to be in most cases quite untenable as separate taxonomic units. Thus the "lumping" policy already seemed to me the most desirable before 1936, and when, in the summer of that year, I observed again among abundant material *in the field* the extreme range of variation¹ that occurred over and over again in closely contiguous plants (not to mention the very different appearance of individual inflorescences in different stages on the same plant), I decided that it would be the only course for me to take in the present instance. Accordingly, I am for the time being citing under *Castilleja pallida*, without further qualification, all the specimens that have been collected on the shores of Hudson Bay within or near our area—even if they have been variously referred by Dr. Pennell, in his recent monographic study, to a northern subsp. *elegans* (Malte)² Pennell (1934, p. 526) or to a "new species" *C. Raupii* Pennell (1934, p. 530).³ However, one specimen from within our area, collected on the north shore of Frobisher Bay in southeast Baffin by Professor Samuel C. Palmer in 1929 (the first and only collection of the species in Baffin), stands apart from the rest in being almost glabrous, among other features. It clearly belongs (as indeed its geographical position would suggest) to the usual plant of eastern North America, viz.,

var. ***septentrionalis*** (Lindl.) A. Gray, Bot. Calif. I, p. 575 (1876).

¹ Especially around Churchill, on the east coast of Hudson Bay to the south of our area, was the variation extreme, the plants being most abundant there and showing little restriction as to habitat. Churchill is easy to reach by rail from The Pas, there being a train almost every week in summer, and I would suggest it as a likely centre for profitable study of this most difficult section of a difficult genus.

² *Castilleja elegans* was validly published by Malte (1934, p. 187), who must, accordingly, be cited as the authority.

³ This last differs from normal *C. pallida* in its more upright axis and narrower spikes, and especially in the very short separation of the calyx-lobes, so that it does indeed seem to represent a fair entity in places, even if in others it is connected through its subsp. *ursina* Pennell to normal *C. pallida*.

General Distribution. ? Circumboreal; wide-ranging latitudinally, but not often truly arctic.¹ Northernmost record "Baring Land," c. 72° N. on Banks Island (McClure ex Simmons 1913, p. 122).

E. Arctic Distribution. Known only from three localities in the extreme south, viz., Chesterfield and Rankin Inlet on the west coast of Hudson Bay (Keewatin), and Frobisher Bay in southeast Baffin.

Occurrence. Evidently rare. At Chesterfield it grew among sparse grasses on sandy plains near the seashore. In our area it is generally only 6-12 cm. high and has not been seen to exceed 16 cm., though it flowers plentifully and sometimes, if not always, ripens seed.

5. S. BAFFIN: r. *Frobisher Bay*, north shore, Palmer 1929 (P) 642379 var. *septentrionalis*.

10. W. COAST HUDSON BAY: r. *Chesterfield*, Malte 1928 (O,G,C) 120557, Sutton 1930 (G) as "*C. pallida* var. *elegans*," Polunin 1936, (Gardner 1937, p. 45); Rankin Inlet, Macoun 1910 (O,N,C) 78370 as "*C. pallida arctica*" scr. Pennell.

250. *Euphrasia arctica* Lange apud Rostrop in Bot. Tidsskr. IV, p. 47 (1870).

E. latifolia Pursh (1814) as to the Labrador plant, not L. (1753)

E. frigida Pugsley

The reasons for adopting the present name instead of the more familiar *E. latifolia* are given by Fernald and Wiegand (1915, p. 194) and, more fully, by Fernald (1933, pp. 302 *et seq.*). According to the former authors (1915, p. 193, and cf. Flora Danica XVII, tab. mmdecccx, 1877), *Euphrasia arctica* should be "5-25 cm. high"; it is so in almost all the material that lies before me, not only from regions to the south of our area but also from much farther north in Greenland, both on the west coast and on the east (cf. also Gelting 1934, p. 155). Such taller plants occur not far to the south at Churchill and Port Harrison, but in marked contrast to this we have the specimens from the several stations within our area generally a bare 1 cm. high when flowering, or at most reaching 2 cm. in this state and 3 cm. when in fruit. They thus represent a geographically delimited entity (cf. Polunin 1939, p. 41) that is far more striking and distinct than most of the reduction phases that in other genera have been set off as northern varieties and subspecies, and I cannot but separate them as

var. *minutissima* n. var.

Planta tota multo minor quam in forma typica, 0.5-2 cm. alta ubi florescens, maxima 4 cm. alta ubi frucescens. Type in British Museum, cotype in Fielding Herbarium of Oxford University: *Nicholas Polunin*, Wakeham Bay, Hudson Strait, No. 1383, July 29, 1936. Figures on Plate VI.

This, then, is the sole representative of the species in our area. It includes specimens from Wakeham Bay collected in 1927 by Dr. Malte and distributed as *E. Oakesii* v. Wettstein, which, even if they had rather blunt bracts suggestive of the latter species, were clearly seen to belong to the *E. arctica* series on boiling out a flower, when the previously shrivelled corolla showed itself to be about 5 mm. long and to have the upper lip quite deeply bilobed.

¹ To the map showing the American distribution of the species given by Pennell (1934, p. 523) there should be added, however, the three older records from the Arctic Archipelago cited by Simmons (1913, p. 122).

General Distribution. According to Fernald and Wiegand (1915, p. 193) "mountains of northern Europe, Iceland and Greenland, south to Newfoundland, eastern Quebec, Michigan and Minnesota." Northernmost record Cape Giesecke, Wollaston Foreland, 74° 30' N. in East Greenland (Gelting 1934, p. 155).

E. Arctic Distribution. Apparently limited to the eastern half of the extreme south, where it is quite general in the mainland regions of Quebec and northernmost Labrador, and also occurs in Baffin northwards to near the Arctic Circle.

Occurrence. Frequent to locally abundant in the mainland parts of its area, rare or overlooked elsewhere. Grows chiefly among sparse, grassy vegetation on rather dry, generally sandy, slopes having a southern exposure. Occurs often in great numbers, but is so diminutive that it has to be looked for to be found. Flowers and fruits abundantly except in places where the growing season is shortened by the late melting of the snow; here, being a summer annual, it is of course unable to persist. All var. *minutissima*:

4. C. BAFFIN: r. "Cumberland Gulf, Kingnait" (Taylor 1863, p. 330, sub nom. *E. officinalis*).
5. S. BAFFIN: o. *Frobisher Bay*, north of York Harbour, Potter 1937 No. 8029. *South Coast*, Lake Harbour, Polunin 1936 No. 2347.
7. N. LABRADOR: o. Burwell, Malte 1928 (O,G) 120163, Polunin 1936 No. 2642; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: f. Wakeham Bay, Malte 1927 (O,G,C) *vide* Fernald—incl. orig. as "*E. Oakesii*", Polunin 1936 Nos. 1383 1411 1473; Sugluk, Polunin 1936 Nos. 1521 1526 1532 1553 1567; Wolstenholme, Polunin 1936 No. 1297; Cape Smith, Polunin 1936.

251. ***Bartsia alpina* L., Sp. Pl. ed. 1, p. 602 (1753).**

A splendid species; our specimens vary little if at all except in luxuriance, and match European material very well. Previously known in America only from Greenland, Akpatok Island (cf. Polunin 1934, p. 204), Labrador, and Newfoundland, it must now be recorded as occurring also at several other points in the Hudson Strait and Bay region—in northern Quebec, southern Baffin, and, south of our area, at Churchill in Manitoba.

General Distribution. Across the subarctic and alpine regions of Europe and eastern North America to the west coast of Hudson Bay. Northernmost record Cape York, 75° 55' N. in West Greenland (H. E. Wetherill 1894, Peary Auxiliary Expedition—specimen in Gray Herbarium).

E. Arctic Distribution. Fairly general in the mainland regions of Quebec in the extreme south; also occurs in northern Labrador and the southernmost parts of the Arctic Archipelago.

Occurrence. Only rare to occasional in its limited area. To be found chiefly in dry and sunny situations among grasses, whether or not the area is dominated by ground-shrubs. Flowers rather late but plentifully, and ripens seeds in most cases, if not always. The axes are generally about 10 cm. high in our area.

5. S. BAFFIN: o. *Frobisher Bay*, Point Brewster, Potter 1937; Ward Inlet, Knapp 1932 (*); York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6.
7. N. LABRADOR: r. *Chidley Peninsula*, 60°-60° 30' N., MacGregor 1905 (K).
8. N. QUEBEC: o. *Diana Bay*, Knapp 1936 (*¹); *Payne Bay*, Ney and Courtright 1936; *Wakeham Bay*, Malte 1928 (O,G,C), Polunin 1936; *Mosquito Bay*, Low 1898 (O).
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Akpatok Island*, Polunin 1931 (B).

252. ***Rhinanthus groenlandicus*** Chabert in Bull. Herb. Boiss. VII, p. 515 (1899), (emend. Ostenfeld in Warming, Bot. of the Faeröes, p. 54 (1901)).

R. oblongifolius Fernald

This species, varying greatly in luxuriance in different individuals even in the same stand, is not infrequent to the south of our area at Churchill on the west coast of Hudson Bay, and at Hebron on the Atlantic coast of Labrador, where "*Rhinanthus Crista-Galli* L." has been reported (anon. 1907, p. 82) as reaching "Chidley Peninsula". A single collection was made by T. M. Cope in 1934 at Cape Eskimo, just inside our area on the west coast of Hudson Bay. The specimens are in the fruiting condition and 10-15 cm. long, but appear to have been hastily broken off above the level of the ground.

General Distribution. America, transgressing into western Europe and the extreme east of Asia. Northernmost record doubtful owing to confusion with other species, but probably around 71° N. in Norwegian Lapland (cf. Dahl 1934, pp. 392-3).

E. Arctic Distribution. Limited to a single locality on the west coast of Hudson Bay, in the extreme southwest corner.

Occurrence. Very rare. The only collection simply labelled "Tundra." South of our area it grows gregariously in meadows and grassy slopes that are sunny and fairly dry, and in Greenland and Iceland it is also to be found in the willow and birch "coppices."

(N. LABRADOR: ? See above.)

10. W. COAST HUDSON BAY: r. Cape Eskimo, Cope 1934 (I).

253. ***Pedicularis groenlandica*** Retz., Fl. Scand. ed. 2, p. 145 (1795).
Elephantella groenlandica (Retz.) Rydberg

This handsome species just reaches northernmost Labrador in the extreme southeast of our area, whence it is represented by two collections. The first was made somewhere on "Chidley Peninsula....60°-60°30' N." by Sir Wm. MacGregor in 1905, and the second at Bowdoin Harbour by C. S. Sewall of the "Rawson-MacMillan Subarctic Expedition, 1927-8." Sewall's two specimens before me are typical and unmistakable. They are in the flowering condition and, respectively, 25 and 30 cm. high. The species is locally quite abundant at Port Harrison and elsewhere a little to the south of our area.

¹ Cf. Polunin 1937c, p. 114.

General Distribution. North America. According to Britton and Brown (1913, III, p. 223) from "Labrador, Greenland and Hudson Bay to Athabasca, British Columbia, south in the Rocky Mountains to New Mexico, and in the Sierra Nevada to California." Northernmost station probably in West Greenland, although I can find no statement as to just where.¹ Lange (1880, p. 74) says "Paa sumpige Steder i V. Grønland mellem 60° og 69°", but the indication in Ostenfeld (1926, p. 64) is that it does not occur north of 61°.

E. Arctic Distribution. Known only from two collections made in northernmost Labrador in the extreme southeast corner.

Occurrence. Evidently very rare. I have no information as to the habitat favoured in our area, but at Port Harrison it occurs chiefly in swampy places—growing more or less gregariously in marshes and on damp soil by the margins of streams and gullies.

7. N. LABRADOR: r. *Chidley Peninsula*, MacGregor 1905 (K); *Bowdoin Harbour*, Sewall 1927 (G).

254. *Pedicularis lapponica* L., Sp. Pl. ed. 1, p. 609 (1753).

This delightful species, which in Lapland is sometimes almost the only bright flower to be seen in miles of parched, lichenous birch-scrub (cf. Leach and Polunin 1932, p. 425, and Polunin 1936, p. 377), is plentiful and apparently without marked variation in the southern parts of our area. Here it flowers abundantly and generally manages to ripen fruit, the axes being almost always between 6 and 15 cm. in height.

General Distribution. Circumboreal. Chiefly subarctic, but occurring also in low-arctic regions. Northernmost record Cape Giesecke, Wollaston Foreland, 74° 30' N. in East Greenland² (Gelting 1934, p. 157).

E. Arctic Distribution. General in the mainland regions of the extreme south, except for northernmost Labrador where it has not been found, and also on Southampton Island and Baffin northwards to the Arctic Circle.

Occurrence. Occasional to locally plentiful within its limited range. Grows chiefly in rather dry, heathy areas, being supposedly parasitic on the roots of the dominant ground-shrubs. Also in the less swampy parts of marshes. Generally gregarious, propagating by long, slender runners.

4. C. BAFFIN: r. "*Cumberland Gulf*, Kingua" (Giese ex Ambronn 1890, p. 83).
5. S. BAFFIN: c. *Frobisher Bay*, Sewall 1927 (G), Palmer 1929 (P); north of *York Harbour*, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Bell 1897 (O*); *Soper (Little Koukdjuak) River*, Soper 1931 (O); *Lake Harbour*, Johansen 1927 (C), Malte 1927 and 33 (O,G,C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; *Amadjuak Bay*, Soper 1926 (O).

¹ Indeed I have heard it suggested as a possibility that the species does not occur at all in Greenland, in which case the type material must have been brought from Labrador, the northernmost locality being then within our area just north of 60° N. (See citations below; also Simmons 1904, p. 471.)

² The reports by Hart (1880, p. 237) of the occurrence of this species far north in Ellesmere and Greenland are discarded as erroneous by Simmons (1906, p. 34, and 1909, p. 53). Again, the specimen on which Grøntved (1936, p. 67) has founded his report from Itivdleriaq, Palmer Bay, belongs in reality to *P. flammea* (q.v.).

8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Cape Wales, Bell 1884 (O,G); Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1936; Sugluk, Malte 1933 (O,G,N), Polunin 1936; Wolstenholme, Johansen 1927 (C), Malte 1928 (O,G,C), Polunin 1936; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Sutton 1930 (G).
10. W. COAST HUDSON BAY: r? *Chesterfield*, Polunin 1936.

255. ***Pedicularis labradorica*** Wirsing, *Eclogae Botanicae*, tab. 10 (1778), and cf. Houttuyn in *Pflanzensyst.* VIII, p. 39, tab. 57c (1782).

P. euphrasioides Stephen (1801)

This characteristic species has been collected only three times within our area—once on “Chidley Peninsula, 60°-60° 30' N.” and twice some miles inland of Lake Harbour in southern Baffin, to which island it is to be recorded as new, as indeed it is to our area and to the entire Arctic Archipelago. Only single plants were found in either case in Baffin, but they were growing luxuriantly, being much branched and, respectively, 10 and 16 cm. high, and showing abundant buds or flowers already in July. The species is very plentiful “all along the line” to the south of our area, and there shows a considerable range of variation in such purely vegetative characters as general robustness and the amount of branching, some of the specimens growing in boggy situations at Churchill being referable to f. *simplex* (Hultén) n. comb. (*Pedicularis euphrasioides* var. *simplex* Hultén in *Kungl. Sv. Vet.-Akad. Handl.* ser. 3, VIII, 2, p. 115 (1930).)

General Distribution. Two-thirds circumboreal. Stretching through subarctic Asia and America from the Urals to West Greenland, southwards on mountains. The northernmost record that I can find is South-East Bay, 68° 45' N. in West Greenland (cf. Porsild 1920, p. 142), but the species probably occurs farther north in Siberia.

E. Arctic Distribution. Limited to one collection from northernmost Labrador and two made inland of Lake Harbour in southern Baffin.

Occurrence. Evidently rare. Grows in the more luxuriant heathy areas, chiefly where there is an abundance of cryptogamic growth.

5. S. BAFFIN: r. Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Polunin 1936 No. 1182.

7. N. LABRADOR: r. *Chidley Peninsula*, MacGregor 1905 (K).

256. ***Pedicularis sudetica*** Willd., *Sp. Pl.* ed. 4, III, p. 209 (1800).

Most arctic members of this genus are sufficiently clear-cut and constant to cause little if any embarrassment even to the most conscientious taxonomist, but the present species by way of contrast is so variable that it obviously needs further study. This I dare not attempt as I have insufficient field experience in other parts of the great range of the species—and field experience seems especially necessary in this group where, as in *Castilleja*, the same plant may look entirely different in various stages of its growth. Thus Trautvetter (1878, p. 56) described as separate varieties of *P. sudetica* (1) the practically capitate flowering and (2) the long spike-like fruiting inflorescences. I will only say that the variation in our area

is most marked in the density and length of the mature fruiting inflorescence, and in the shape of the pods. These latter may be oblong or gradually tapering towards the apex, and either short and plump, barely exceeding the calyx-tube, or relatively long and slender, twice the length of the calyx-tube.

The species with us is generally not more than 10 cm. high when flowering, but thereafter elongates to a total of 15-30 cm. Although it has been known from Southampton Island since the time of Parry, its distribution is given by Hultén (1930, p. 123) as "Eurasian, transgressing into western America"—and reasonably so, even if he might have allowed America the distinction of having already experienced this transgression, for the species certainly seems to be "western" in its relationships, following continuous land (or narrow straits that are regularly blocked by ice) to a most easterly point in Baffin, and also inhabiting Southampton Island, whose "western" affinities we have noted over and over again. Indeed it seems permissible to postulate that this migration into our area is relatively recent, and that the exhibition of plasticity by the species, which we have mentioned above, may be connected with this occupation of "new" territory, as seems frequently to be the case with other groups of plants elsewhere, and especially in the north when previously glaciated territory becomes recolonized.

General Distribution. ? Nearly circumpolar—not known from Greenland or western Europe. Northernmost record Dundas Harbour, 74° 35' N. on Devon Island (Malte 1927, specimens in Ottawa and Copenhagen Herbaria; Polunin 1934 and 6).

E. Arctic Distribution. Widespread from the west coast of Hudson Bay, Southampton Island, and Melville Peninsula to central and northern Baffin and Devon Island.

Occurrence. Generally rather infrequent. Grows with us only in marshes, where it may sometimes be abundant very locally. Flowers and sets ripe seed in plenty, even in its most northerly station.

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Malte 1927 (O,C), Polunin 1934 and 6.
3. N. BAFFIN: o. Pond Inlet, Mathiassen 1923 (C), Polunin 1934 and 6, Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O,C), Polunin 1936.
4. C. BAFFIN: r. *Cumberland Gulf*, Pangnirtung, Turner 1935 (K).
6. MELVILLE PENINSULA: o. Repulse Bay, Rae 1847 (K), Olsen 1922 (C). *Vansittart Island*, Mathiassen 1921 (C); Danish Island, Freuchen 1922 (C).
9. ISLANDS IN HUDSON, ETC., BAYS: f. *Southampton Island*, York Bay, Parry 1821 (B,C); South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Polunin 1934 and 6, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o. Chesterfield, Malte 1928 (O,G), Gardner 1933 (G), Polunin 1936.

257. ***Pedicularis lanata*** Cham. and Schl. in *Linnaea* II, p. 583 (1827).

Perhaps the most handsome of all high-arctic plants, with its tall woolly spike of bright pink flowers and its fat yellow root, which pulls up so easily and which, even if its taste is somewhat earthy, I have on occasion been very glad to find. It is one of the few tolerably palatable plants

of these inhospitable regions, although not generally so recognized by others—if the natives started to eat it the species would probably disappear from the coastal regions of the south after a few years. It is conspicuous and characteristic and not to be confused with any other species in the field, even if in herbaria it has sometimes proved difficult to separate from the next species (cf. Simmons 1906, pp. 29 *et seq.*) and even from *P. hirsuta*. With us *P. lanata* is most often between 10 and 20 cm. high, but it may exceed the latter figure when in the mature fruiting state. It is one of the first flowers to appear when the snow melts, and although the uppermost blossoms on the rapidly elongating spike come out many days after the lowest, they are all rather quickly “over,” and hence missed by most summer visitors.

General Distribution. Circumpolar, but apparently absent from East Greenland and most of continental Europe. Northernmost record Discovery Harbour, 81° 43' N. in Ellesmere (H. C. Hart 1876, Alert and Discovery Expedition—specimen in British Museum, sub nom. *P. hirsuta*).¹

E. Arctic Distribution. Probably almost complete on ice-free land, but not yet found in northernmost Labrador or on Devon Island or parts of Ellesmere and Keewatin.

Occurrence. Fairly frequent almost everywhere, but rarely at all abundant. Grows chiefly in dry, heathy areas that are sheltered and covered with snow in winter, but may also be found in marshes and on sparsely vegetated, gravelly soil in exposed places, thus exhibiting a wide range of tolerance to most factors of the environment.² Abundantly flowering and fruiting.

1. ELLESMERE: 1. Discovery Harbour, Hart 1876 (B) as “*P. hirsuta*.” *South Coast*, Fram Fiord, Simmons 1899 (K); Harbour Fiord, Simmons 1900 (N,K,C); “Musk-ox Fiord” (Simmons 1906, p. 31).
2. DEVON, ETC., ISLANDS: 1. *Somerset Island*, Port Kennedy, Walker 1858 (K).
3. N. BAFFIN: f. Pond Inlet and near, Soper 1923 (O,C), and six others (O,M,G,N,C); near Qorlortoq, Freuchen 1924 (C). *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O,C); Arctic Bay, Malte 1927 (O), Polunin 1936; near Nyeboes Fiord, Freuchen 1924 (C).
4. C. BAFFIN: o. ?“Scotts Bay and Cape Searle” (Taylor 1863, p. 330, sub nom. *P. Langsdorfii*). *Cumberland Gulf*, ?“Kingnite” (Taylor 1863, p. 330, sub nom. *P. Langsdorfii*); Pangnirtung, Polunin 1936; Nettilling Lake, Soper 1925 (O,N).
5. S. BAFFIN: c. *Frobisher Bay*, Point Brewster, Potter 1937. *South Coast*, Bell 1897 (O*); Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Malte 1928 and 33 (O,G,C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; “Big Island” (Tarr ex Rowlee and Wiegand 1897, p. 421); Bowdoin Harbour, Robinson 1922 (G) 4 as “*P. Langsdorfii* var. *lanata*,” Soper 1926 (O); Cape Dorset, Burwash 1924 (O), Soper 1926 (O), Polunin 1934 and 6.
6. MELVILLE PENINSULA: f. Fury and Hecla Strait, Parry 1822 (C); Gore Bay, Freuchen 1922; Repulse Bay, Rae (K*), Olsen 1922 (C). *Vansittart Island*, Freuchen 1922 (O,C); Danish Island, Mathiassen 1921 (C), Freuchen 1922 (C); Georgina Island, Freuchen 1922 (C).

¹ Greely's specimen in the Gray Herbarium labelled “*P. Langsdorfii* var. *lanata*” belongs to *P. Langsdorfii* var. *arctica* (q.v.).

² This may account for different authors having given widely different habitats, all of which are occupied by the species in our area. Thus Simmons (1906, p. 31) says that in Ellesmere it is found “mostly in rather wet places having a dense vegetation”, and Porsild (1920, p. 143) says that in West Greenland it is “In poor and open heath, often in gravelly barrens far away from other plants”.

8. N. QUEBEC: f. Diana Bay, Knapp 1936; Payne Bay, Ney and Courtright 1936; Stupart Bay, Payne 1886 (T) as "*P. Langsdorfii* var. *lanata*"; Wakeham Bay, Malte 1927, 28, and 33 (O,G,C), Polunin 1936; Wolstenholme, Polunin 1934 and 6; Digges Island, Bell 1885 (O*,B) 1713 as "*P. Langsdorfii*."
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B) *pars*; Nottingham Island, Mackenzie 1886 (O*), Johansen 1927 (C). *Southampton Island*, York Bay, Mathiassen 1922 (C); South Bay, Malte 1928 (O,G), Sutton 1930 (G), Manning 1934, Polunin 1934 and 6; Noksaruak, Baird 1936, Rowley 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: r. Fullerton, Borden 1904 (O*).

258. **Pedicularis Langsdorfii** Fisch.¹ ex Steven, Monogr. *Pedicularis*, p. 49, tab. IX (1822).

This name has to be given priority over the one of Robert Brown (See below) because of the earlier distribution of separate copies of Steven's work (cf. Hultén 1930, p. 118), even if it did not appear in Bull. Soc. Nat. Mosc. until 1823.² *P. Langsdorfii* is a tall and robust plant of the northern Pacific regions; our plant differs from it in the more lanate and shorter (not longer as stated by Hultén *l.c.*) spike and the generally broader rachis to the leaf. The flowers also tend to be smaller, but, judging from material that I have seen from Etah in northwest Greenland (leg. Ekblaw), not as constantly as Hultén suggests. This northern plant appears to constitute a mere variety that, as it is clearly the one described by Robert Brown from Melville Island,³ is to be termed

var. *arctica* R. Br.) *n. comb.*

Pedicularis arctica R. Br. in Suppl. App. Parry's 1st Voyage, p. cclxxx (1824)².)

The very "*P. hirsuta*-like habitus" of this is well illustrated by Simmons (1906, Pl. 2). Indeed it has often been confused with *P. hirsuta*, into which it so grades in the south of our area that for a time I thought it represented a variety of this species, which occasionally in otherwise typical examples may have a short tooth on the galea. However, the unusually large, dark purple, conspicuously spreading and clearly bidentate flowers of the far northern material identify it with *P. Langsdorfii*. Of the material from within our area south of central Ellesmere I am not so sure; I can only say that it is not typical of the high-arctic plant described by Robert Brown, and that I am referring it here chiefly on the authority of Mr. A. E. Porsild, who has observed the typical form in the field and much material of var. *arctica* in the great Scandinavian herbaria.

General Distribution. The entire species North American, transgressing into eastern, and perhaps also central, Asia. Var. *arctica* in arctic

¹ Usually, but erroneously, spelt "*Langsdorffii*", or sometimes *Langsdorffi* or *Langsdorfi*. I have taken the liberty of standardizing the citations on pp. 332-6 (cf. original publication).

² It is clear that the "Supplement to the Appendix", which contains Brown's "List of Plants" and includes his diagnosis of *P. arctica*, did not appear until early in 1824 (the date given on the title page following p. clxxxix), even if Parry's "Advertisement" was dated 1823, and this is the date given for the more generally available "*Chloris Melvilliana*"—as Brown's paper was called when it was reprinted in his "Miscellaneous Botanical Works" which appeared in 1866.

³ This I have recently confirmed from a specimen, probably the type, in the British Museum Herbarium, collected during Parry's first voyage (1819-20) and labelled in the hand of Robert Brown "*Pedicularis arctica* Melville Island E. Sabine".

America from the north coast of Alaska and Mackenzie across the northernmost parts of the Arctic Archipelago to northwest Greenland. Northernmost record Discovery Harbour, 81° 43' N. in Ellesmere (A. W. Greely, specimen in the Gray Herbarium, sub nom. *P. Langsdorfii* var. *lanata*).¹

E. Arctic Distribution. Lady Franklin Bay and Hayes Sound districts in eastern Ellesmere. Less typical and, therefore, somewhat doubtful specimens have also been collected in Melville Peninsula and several parts of Baffin, where they occur from Bylot Island (almost typical) in the north to Lake Harbour on the south coast.

Occurrence. In the Far North local and generally only occasional; specimens that are probably to be referred here are also occasional in Baffin. Grows in areas generally damper than those favoured by the last species—most typically in closed marshes. It flowers plentifully and probably ripens fruit, although neither Simmons nor I ever saw the seeds, and in our area generally grows between 5 and 15 cm. high. All var. *arctica*:

1. ELLESMERE: l. *Lady Franklin Bay*, Discovery Harbour, Greely (G) as "*P. Langsdorfii* var. *lanata*."¹ *Hayes Sound region*, Cape Viele, Simmons 1899 (N,C); "*Eskimopolis*" (Simmons 1906, p. 33); *Lastraea Valley*, Simmons 1899 (G,K,C).
2. DEVON, ETC., ISLANDS: r. *Somerset Island*, Port Kennedy, Walker (K*).
3. N. BAFFIN: o. *Bylot Island*, Button Point, Wilcox 1928 (O) 125627 as "*P. hirsuta*"; *Koroqdjuaq*, Mathiassen 1923 (C) 820 as "*P. hirsuta*"; *Pond Inlet* and near, Mathiassen 1923 (C) 773 as "*P. hirsuta*", Bazin 1935 (O,M) *fide* A. E. Porsild, Polunin 1936 No. 2471; *Port Bowen*, Parry 1825 (specimen in Herb. Edinburgh) as "*Pedicularis hirsuta*".
(S. BAFFIN: ? *Soper (Little Koukdjuak) River*, Soper 1931 (O) 125762 125768; *Lake Harbour*, Polunin 1936 Nos. 1174? 1224?.)
(MELVILLE PENINSULA: ? *Igloolik*, Parry 1822 (specimen in Herb. Edinburgh) as "*Pedicularis hirsuta*.")

259. *Pedicularis hirsuta* L., Sp. Pl. ed. 1, p. 609 (1753).

This is by far the commonest *Pedicularis* in our area, except in a few of the most southerly districts where it is rare. It varies considerably in several characters—but not, I think, constantly or even strikingly enough to demand the separation of any intraspecific entities. Thus, it is variable in the colour, width, and shape of the galea, which not infrequently bears a small tooth on either side, so suggesting the last species, to which such specimens may perhaps be transitional. It also varies in the shape and size of the fruit—and most noticeably in luxuriance. Thus, whereas the vast majority of specimens are between 10 and 20 cm. high in the mature fruiting stage, some may reach almost 30 cm. but still remain robust. Others, again, fail to exceed 4-5 cm.—especially in the Far North, where even such high-arctic species as this tend to be less luxuriant than they are farther south.

¹ Recently I saw also a specimen in Herb. Edinburgh, collected by Hart at Discovery Harbour ("Winter Quarters H.M.S. Discovery") and labelled "*P. sudetica*".

General Distribution. Circumpolar. All over the Arctic, but not known south of the 60th parallel. Northernmost record Frederick E. Hyde Fiord, 83° 15' N. in Peary Land on the north coast of Greenland (Colonel I. P. Koch ex Ostenfeld and Lundager 1910, p. 31).

E. Arctic Distribution. Probably complete on ice-free land.

Occurrence. Common in most places, but only rare to occasional in some areas in the mainland regions of the extreme south. Grows chiefly in grassy places or open spots in the heath, but also on still more open, gravelly or sandy areas and in late-snow patches. Indeed it has such a wide amplitude in the scales of moisture, competition, exposure, and the time of melting of the snow, that it can occur in almost any land habitat or plant community, including marshes (cf. Malte 1934, p. 188). Like the other inhabitants of late-snow areas, it may here be found in flower long after all the other plants around are over; but generally it flowers and fruits rather quickly and early, and almost always abundantly.

1. ELLESMERE: c. *Grant Land*, 82° 30' N., Bartlett 1908 (K,C); Shift Rudder Bay, Feilden (K,B) as "*P. sudetica*"; Discovery Harbour, Hart (K). *Hayes Sound*, Feilden (K); Bache Peninsula, Malte 1927 (O,G); Cape Rutherford, Simmons 1899 (C); Twin Glacier Valley, Simmons 1899 (G); "Fram Harbour" (Simmons 1906, p. 29). *South Coast*, Wetherill 1894 (G); Craig Harbour, Soper 1923 (O), Malte 1927 (O,G), Polunin 1934 and 6; Harbour Fiord, Simmons 1900 (N,K); Goose Fiord, Simmons 1902 (C).
2. DEVON, ETC., ISLANDS: c. "N. Kent" (Simmons 1909b, p. 20). *Devon Island*, 'Lancaster Sound,' Walker 1857 (K); Dundas Harbour, Malte 1927 (O,C), Polunin 1934 and 6; Cuming Creek, Borden 1904 (O*); between Beechy Island and Northumberland Sound, Lyall 1852 (K); "Wellington Channel", (Lyall ex Hooker 1857, p. 117). "*Somerset Island*, Elwyn Inlet" (Markham 1874, p. 295); "Port Kennedy" (McClintock 1860, p. 327), (Walker ex Hooker 1861, p. 84).¹
3. N. BAFFIN: c? Pond Inlet and near, Lyall (K*), Walker 1857 (K), Borden 1904 (O*), Polunin 1934 and 6; "Navy Board Inlet" (Markham 1874, p. 295); Arctic Bay, Malte 1927 (O,G), Polunin 1936; Port Bowen, Parry 1825 (K); Gifford Fiord, Mathiassen 1922 (C).
4. C. BAFFIN: c. Scotts Bay, Taylor (K); Clyde, Polunin 1934 and 6; Cape Searle,² Taylor 1860 (K); "Exeter Sound" (Seidenfaden 1932, p. 14). *Cumberland Gulf*,² Kumlien (G), (Taylor 1863, p. 330), (Giese ex Ambronn 1890, p. 83); Pangnirtung, Malte 1927 (O,C), Polunin 1934 and 6, Turner 1935 (K); Kekerten, Kumlien (G); Blacklead Island, Soper 1924 (O).²
5. S. BAFFIN: c. "Signuia" (Schuchert and White ex Holm 1900, p. 66); Loks Land, Palmer 1929 (P). *Frobisher Bay*, Sewall 1927 (G), Palmer 1929 (P); Point Brewster, Potter 1937; Ward Inlet, Knapp 1932 (*); York Harbour, Potter 1937. *South Coast*, Lake Harbour, Polunin 1936; Upper Savage Island, Parry 1821 (C), Bell 1884 (O*); "White Strait and Big Island" (Tarr ex Rowlee and Wiegand 1897, p. 421); Ashe Inlet, Bell 1884 (G) as "*P. Langsdorfii*"; Tchark-bach Fiord, Bell 1897 (O*); Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Soper 1926 (O), Malte 1928 (O,G), Polunin 1934 and 6.
6. MELVILLE PENINSULA: c. "Fury and Hecla Strait and Neerlo Nakto" (Parry ex Hooker 1825, p. 402); Igloolik, Edwards (B), Hooper (L, note only), Parry 1823 (B,C); Ugli Island, Mathiassen 1922 (C); Barrow River, Hooper 1822 (L), Parry (B,C) as "*P. lanata*"; "Five Hawser Bay" (Parry ex Hooker 1825, p. 402); Repulse Bay (Parry ex Hooker 1825, p. 402), Rae 1847 (K), Olsen 1922 (C). *Vansittart Island*, Bangsted 1923 (C).

¹ The Port Kennedy reports are confirmed by a specimen in Herb. Edinburgh, collected by Dr. Walker near the winter quarters of the "Fox".

² It is probable that most if not all of the reports by Taylor (1863, p. 330) of "*P. arctica*", "*P. Kanei*", and "*P. Nelsoni*" from various parts of eastern Baffin refer also to the present species. Thus I have seen in Herb. Edinburgh two specimens of *P. hirsuta* collected (1) in 1861 at Kingnute in Cumberland Gulf, and labelled "*P. arctica*", and (2) in 1860 at Dark Head in West Greenland, and labelled "*P. Kanei*".

7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O*); Burwell, Polunin 1936.
8. N. QUEBEC: c. Diana Bay, Knapp 1936; "Cape Wales" (Bell ex Macoun 1886, p. 573); Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1928 and 33 (O,G,N,C), Polunin 1936; Sugluk, Polunin 1936; Wolstenholme, Low 1898 (O*), Johansen 1927 (C), Malte 1928 (O,G), Polunin 1934 and 6; "Digges Island" (Bell ex Macoun 1886, p. 573); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: c. Akpatok Island, Polunin 1931 (B) 249 as "Pedicularis sp." and 7 Nos. as "P. lanata"; Nottingham Island, Bell 1884 (O*,G) as "P. Langsdorfii var. lanata." *Southampton Island*, (?Lyon ex Hooker 1825b, p. 193); South Bay, Sutton 1930 (G), Polunin 1934 and 6; Walrus Island, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o. Chesterfield, Freuchen 1923 (O,C), Malte 1928 (O,G,C), Polunin 1936; Cape Eskimo and near, Macoun 1910 (O*), Birket-Smith 1923 (C).

260. *Pedicularis flammea* L., Sp. Pl. ed. 1, p. 609 (1753).

This well-marked and rather peculiar species, common almost throughout the most southerly parts of our area, varies little except in size and luxuriance, the characteristic mature fruiting axes being anywhere from 6 to 20 cm. high. As already pointed out by Sørensen (1933, p. 106), "the postfloral growth of the flower-bearing stems....is particularly conspicuous in this species, in that the stem in the period of postfloration in addition to increasing in length also increases rather considerably in thickness...." Around Port Burwell, in the north of Labrador, it occurs in much greater numbers than any other member of the genus, *P. hirsuta* being almost absent just there. A single plant representing a very distinct but apparently undescribed colour-form was seen at Lake Harbour in 1936. This had the corolla pale yellow throughout, whereas normally it is dark brown towards the base:

f. *flavescens* n. forma

A forma typica differt corolla tota pallida flava.

General Distribution. Europe and eastern North America, extending westwards to the Rocky Mountains.¹ Chiefly subarctic and alpine. Northernmost record, north side of Kilauea, 77° 40' N. in Skaerfjord, East Greenland (Seidenfaden ex Seidenfaden and Sørensen 1937, p. 77).²

E. Arctic Distribution. Probably complete in both the insular and mainland regions of the extreme south, and fairly general northwards to the Arctic Circle. North of this apparently rare, although occurring as far north as Dundas Harbour on the south coast of Devon Island.²

Occurrence. Common in the extreme south, but only rare to occasional north of 65°. Grows chiefly in damp meadows and marshes, where it is gregarious and may be quite abundant. More rarely in drier situations. Generally snow-covered in winter, though it shuns long-lasting drifts. Flowers and fruits abundantly and very quickly.

¹ Simmons (1909, p. 53) mentions it from Alaska, but I can find no specimens from there or from anywhere in Asia.

² The report by Hart (1880, p. 238) from Hayes Sound in Ellesmere is to be discarded as highly improbable (cf. Simmons 1906, p. 28).

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1936 No. 2495.
3. N. BAFFIN: r. Arctic Bay, Polunin 1936.
4. C. BAFFIN: o. "Kivitung" (Boas ex Ambronn 1890, p. 97). *Cumberland Gulf*, Pangnirtung, Turner 1935 (K), Polunin 1936; Nettilling Lake, Soper 1925 (O,N).
5. S. BAFFIN: c. Loks Land, Palmer 1929 (P). *Frobisher Bay*, Sewall 1927 (G); north of York Harbour, Potter 1937; Point Brewster, Potter 1937; Ward Inlet, Knapp 1932; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. 'South Coast', Bell 1897 (O*); Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Malte 1927, 28, and 33 (O,G,C), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6 incl. f. *flavescens*; Bowdoin Harbour, Robinson 1922 (G); Cape Dorset, Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. Palmer Bay, Bangsted 1922 (C) 137 as "P. lapponica"; Five Hawser Bay, Parry 1821 (B*,C).
7. N. LABRADOR: c. Lacey Island, Potter and Brierly 1934 (G). *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O*); Burwell, Borden 1904 (O*), Hantzsch 1906 (D*), Macoun 1910 (O*), Malte 1927, 28, and 33 (O,G,N,C), Polunin 1931, 4, and 6; Lady Job Harbour, Potter 1937.
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Stupart Bay, Payne 1886 (T); Wakeham Bay, Malte 1928 and 33 (O,G), Polunin 1936; Sugluk, Polunin 1936; "Hyla" (Bell ex Macoun 1886, p. 573); Wolstenholme, Polunin 1934 and 6; Digges Island, Bell 1884 (O*,G,N,B); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B) 13 Nos. as "Pedicularis sp."; Mansel Island, Bell 1884 (O*). *Southampton Island*, South Bay, Malte 1928 (O) 120696 as "P. lapponica," Sutton 1930 (G), Baird 1936; Cape Low, Baird 1936; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o. Chesterfield, Polunin 1936; Cape Eskimo, Güssow 1932 (B).

261. ***Pedicularis capitata*** Adams in Mém. Soc. Nat. Mosc. V, p. 100 (1817).
P. Nelsonii R. Br.

This is another attractive and quite unmistakable species, even if in our area it varies somewhat in the size of the corolla and in the number of flowers to the inflorescence. It grows generally about 10 cm. high, sometimes reaching 15 cm. in the south but in the Far North most often only 5-6 cm. However, Gen. Greely's specimen in the Gray Herbarium, collected much farther north than any other except Hart's (See below) of which I know, is robust and nearly 10 cm. high, with especially large flowers, so we are evidently dealing with a truly arctic species. As will be seen from the distribution given below, the species is "western" in affinity like *P. sudetica*. It has, however, spread somewhat farther than *P. sudetica* (q.v.), for it occurs in northwest Greenland and southwest Baffin. The sea freezes regularly in winter between each of these regions and points that are more definitely "western."

General Distribution. Asiatic-American. From the River Ob to northeast Ellesmere and northwest Greenland—a map of the distribution is given by Fernald (1925, p. 325), to which must now be added the localities given in Hultén (1930, p. 109) and several of our own below. Northernmost record Discovery Harbour, 81° 43' N. in Ellesmere (H. C. Hart, specimen in Kew Herbarium, and A. W. Greely, specimen in Gray Herbarium).

E. Arctic Distribution. General in Ellesmere, extending southwards through Devon, etc., Islands to northwest Baffin, Melville Peninsula, and Southampton Island. Also in southwest Baffin.

Occurrence. Generally only occasional in its limited area, but growing gregariously. Occurs both in marshy areas and on dry slopes and ridges, being apparently tolerant to very varying conditions of moisture and exposure, and, in the south, also of snow-covering. Flowers and fruits abundantly, the corolla being dull yellow with the top of the galea conspicuously tinged with purple in all the fresh examples that I have seen (cf. Malte 1934, p. 188).

1. ELLESMERE: f. Discovery Harbour, Hart (K), Greely (G); Walrus (Norman Lockyer) Island, Hart 1875 (K,B). *Hayes Sound region*, Feilden 1875 (K), Simmons 1899 (C); "Flagler and Beitstad Fiords, and Fort Juliane and Pim Island" (Simmons 1906, p. 27); Twin Glacier Valley, Simmons 1899 (K); 'Edwards Grief,' Hart 1875 (K); Bache Peninsula, Malte 1927 (O,G,C). *South Coast*, "Fram Fiord" (Simmons 1906, p. 27); Harbour Fiord, Simmons 1900 (N,C); "Musk-ox, Goose, and Walrus Fiords" (Simmons 1906, p. 27).
2. DEVON, ETC., ISLANDS: o. *Devon Island*, Dundas Harbour, Malte 1927 (O,G,C), Polunin 1934 and 6. *Somerset Island*, Port Kennedy, Walker 1858 (K).
3. N. BAFFIN: o. Arctic Bay, Malte 1927 (O,G,C), Polunin 1936; Gifford Fiord, Mathiassen 1922 (C); Nyeboes Fiord, Freuchen 1922 (C).
5. S. BAFFIN: l. Upper Savage Island, Parry (B); Seal Harbour, Robinson 1922 (G); Bowdoin Harbour, Robinson 1922 (G), Soper 1926 (O).
6. MELVILLE PENINSULA: f. Igloolik, Parry 1823 (B,C); Neerlo Nakto, Parry (B)¹; Duckett Cove, Parry (C); Repulse Bay, Olsen 1922 (O,N,K,C). *Vansittart Island*, Bangsted 1923 (C); Danish Island, Freuchen 1922 (O,C).
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, "York Bay" (ex Hooker 1825, p. 402, sub nom. *P. Nelsonii*); South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Polunin 1934 and 6; Cape Low, Baird 1936.

LENTIBULARIACEAE

262. *Pinguicula vulgaris* L., Sp. Pl. ed. 1, p. 17 (1753).

The dear and familiar "Butterwort" is plentiful "all along the line" to the south of our area, but was not discovered within it until the Canadian Eastern Arctic Expedition of 1936, when I found a single flowering plant surrounded by a colony of seedlings on July 27 a few miles inland of Lake Harbour in southern Baffin. The species is new also to the entire Arctic Archipelago. A month later, on our return to Lake Harbour, a number of fruiting specimens were found on a slope at the head of the fiord between the Hudson's Bay Company's post and the R.C.M.P. detachment. The flowering plant was 5 cm. high, the fruiting ones mostly 7-8 cm. high.

General Distribution. ? Circumboreal. Wide-ranging latitudinally, but not really arctic. Northernmost record, head of Franz Josef Fiord, c. 73° 10' N. in East Greenland (Menziess 1932, p. 559).

E. Arctic Distribution. Known only from the vicinity and hinterland of Lake Harbour in southern Baffin.

Occurrence. Only found twice, and evidently very rare. The earlier collection was growing on open and very damp, clayey soil, the nearest plants to it being the only specimens of *Carex capitata* ever to be found within our area.² The plants of the second collection were growing on dark, humous soil among other small plants, on a south-facing bank whose surface was parched by the sun, but which was moist only just underneath.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936 Nos. 1212 2348.

¹ There is also a specimen in Herb. Edinburgh collected at Neerlo Nakto during Parry's second expedition, with the date given wrongly as "1824".

² See p. 109.

PLANTAGINACEAE

263. *Plantago juncoides* Lam., Tabl. Encycl. Méth. Bot. I, p. 342 (1783)¹.
P. maritima of authors, not L.

For a detailed account of the variations of this and the closely related species with which it has long been confused See Fernald (1925b, pp. 93 *et seq.*). *Plantago juncoides* has been found twice within our area—in 1884 on Nottingham Island by Dr. Robert Bell, Director of the Geological Survey, Canada, and in 1937 by Professor David Potter, in Frobisher Bay, southeast Baffin. The earlier record, whose validity I see no reason to doubt, was duly reported by Macoun (1886, p. 575, sub nom. *P. maritima*), but seems to have been overlooked ever since (for instance by Simmons in his "Phytogeography", cf. 1913), with the result that the species is not usually credited with reaching the Arctic Archipelago. Its presence on Nottingham Island, at the junction of Hudson Strait and Hudson Bay, points the way to a likely migration route around seashores in modern times and, with a similar northern occurrence shown by *Carex Mackenziei* (*C. norvegica* Willd., non Retz.), *C. maritima*, "*C. glareosa*," and *Zostera marina*, seems to discount somewhat Prof. Potter's own (1932, cf. especially map on p. 75) "Botanical evidence for a Post-Pleistocene marine connection between Hudson Bay and the St. Lawrence Basin." The specimens from within our area, and almost all those from Churchill a little to the south, belong to the usual dwarfed northern

var. *glauca* (Hornem.) Fernald in Rhodora XXVII, p. 101 (1925).

General Distribution. The whole species American, transgressing into western Europe. Stretching from northern Norway to the west coast of Hudson Bay, and on the Pacific coast from Alaska to California (cf. Fernald 1925b, pp. 99 *et seq.*). Also in Patagonia. Northernmost record Ingnerit Fiord, Magdlâq, 71° 7' N. in West Greenland (M.P. and R.T. Porsild 1929—specimen in the Gray Herbarium). It also occurs nearly as far north in Norway (specimens in British Museum, coll. Polunin 1930 and 33).

E. Arctic Distribution. Known only from Nottingham Island, in Hudson Strait, and Frobisher Bay, in southeast Baffin.

Occurrence. Very rare, and not seen by me within the area. To the south and elsewhere it grows in saline habitats near the sea, generally on open mud around high-water mark in brackish lagoons or tidal estuaries. All var. *glauca*:

5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 No. 8075.

9. ISLANDS IN HUDSON, ETC., BAYS: r. Nottingham Island, Bell 1884 (O) 16892.

CAMPANULACEAE

264. *Campanula uniflora* L., Sp. Pl. ed. 1, p. 163 (1753).
C. linifolia of authors

This species varies considerably in appearance at different stages, the flower being often pendulous, the fruit generally erect. The axis also increases markedly in thickness during the maturation of the fruit—by

¹ For publication date See Jour. Bot. 1906, p. 319.

just what process I have not yet had any opportunity of investigating. Other variations, which to some extent are also seasonal, occur in the hairiness of the ovary, the length of the calyx-lobes and especially of the corolla tube, and the number and length of the stems, which are generally around 10 cm. but may be as little as 5 or as much as 20 cm. high. The species flowers plentifully, but often so late that successful fructification is prevented by frost, to which it appears to be unusually susceptible—that is, for a high-arctic plant that grows almost as well in the Far North as in the south.

General Distribution. Across northern Europe, Greenland, and America to St. Paul Island in Bering Sea. Chiefly arctic and alpine. Northernmost record c. 79° 40' N. in Videfjord (Wijde Bay), Spitsbergen (Polunin 1933, field notes).

E. Arctic Distribution. Probably complete in the south except on calcareous areas, and fairly general northwards to the Hayes Sound region of Ellesmere, but not recorded from the extreme north.

Occurrence. Generally only occasional in spite of its wide range, and never noted as abundant or of any vegetational importance. Grows chiefly on grassy ledges and sheltered talus or earthy slopes that are dry or at least well drained. Occasionally to be found also on moist clay or gravel plains.

1. ELLESMERE: o. *Hayes Sound region*, "Cape Rutherford" (Simmons 1906, p. 26); Fram Harbour, Simmons 1899 (N,K,C). *South Coast*, Harbour Fiord, Simmons 1900 (G,C).
2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1934 and 6.
3. N. BAFFIN: o. Pond Inlet and near, Borden 1904 (O,G,N), Freuchen 1924 (O,C), Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O), Polunin 1936.
4. C. BAFFIN: f. "Cape Adair" (Taylor 1863, p. 329); "Kivitung" (Boas ex Ambronn 1890, p. 98); Cape Searle, Taylor 1860 (K,B); Exeter Fiord, Taylor (K). *Cumberland Gulf*, (Taylor 1863, p. 329); Pangnirtung, Soper 1924 (O), Polunin 1934, Turner 1934 and 5 (K); Nettilling Fiord, Soper 1925 (O).
5. S. BAFFIN: c. Signuia near Cape Haven, Schuchert and White 1897 (O,N); Loks Land, Palmer 1929 (P). *Frobisher Bay*, Palmer 1929 (P); Point Brewster, Potter 1937; Ward Inlet, Knapp 1932 (*). *Resolution Island*, Acadia Harbour, Potter 1937. *'South Coast'*, Bell 1897 (O); Upper Savage Island, Parry (B); Lake Harbour, Malte 1928 (O,G), Soper 1931 (O), Knapp 1933, Polunin 1934 and 6; Amadjuak Bay, Soper 1926 (O); Seal Harbour, Robinson 1922 (G); Bowdoin Harbour, Soper 1926 (O); Cape Dorset, Soper 1926 (O), Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. Lyon Inlet, Hooper (L, note only); Five Hawser Bay, Parry (B); Duckett Cove, Hooper 1821 (L), Parry (C); Repulse Bay, Olsen 1922 (C).
7. N. LABRADOR: f. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O,G,B); Burwell, Borden 1904 (O), and six others (O,G,N,C,D*); Bowdoin Harbour, Potter 1937; Grenfell Tickle, Potter and Brierley 1934 (G).

8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936; Cape Wales, Bell 1884 (O,B); Stupart Bay, Payne 1886 (T); Wakeham Bay, Johansen 1927 (C), Malte 1927 and 33 (O,G,C), Polunin 1936; King George Sound, Bell 1897 (O); Sugluk, Malte 1933 (O), Polunin 1936; "Eskimo Village of Hyla" (Bell ex Macoun 1886, p. 559); Wolstenholme, Johansen 1927 (C), Malte 1928 (O,G), Polunin 1934 and 6; opposite Digges Island, Low 1898 (O); "Digges Island" (Bell ex Macoun 1886, p. 559); Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: 1. *Southampton Island*, White Island, Mathiassen 1922 (C); York Bay, Hooper 1821 (L, note only); South Bay, Sutton 1930 (G), Manning 1934; Coats Island, Porsild 1930 (O*).
10. W. COAST HUDSON BAY: o? Chesterfield, Burwash 1926 (O), Polunin 1936.

265. *Campanula rotundifolia* s.l. (L., Sp. Pl. ed. 1, p. 163 (1753)).

This is a *typus polymorphus* of which numerous segregates and varieties have been described—to but doubtful advantage in most cases, even if some of them are quite distinct cytologically (cf. Böcher 1936, p. 269). Thus Malte has given (1934, pp. 189-90) an excellent if non-committal discussion in which he expresses great doubt as to whether *C. Gieseckiana* Vest (now reduced to a subspecies of *C. rotundifolia*, and probably synonymous with its var. *arctica* Lange) is separable, at least in our area. The same may be said of certain others of the proposed forms, as the pubescence and length of the corolla and other characters on which they are separated are extremely variable, changing not only with local conditions but also from plant to plant in the same population. Most of the specimens from within our area seem referable to var. *arctica* Lange, a view also held by Asa Gray, who so labelled Robert Bell's specimen in the Gray Herbarium; but my material is so limited, although at the same time so variable, that I prefer for the time being not to take up any intraspecific names at all. I, accordingly, refer the plants to this aggregate species without further qualification.

Within our area *Campanula rotundifolia* grows most often about 10 cm. high, although it may be twice that size or on the other hand much dwarfed. It generally manages to flower, but often so late that it fails to ripen fruit, being essentially a southern type and very susceptible to frosts, which in most of our area can occur at almost any time of the year.

General Distribution. ? Circumboreal. Chiefly subarctic and north-temperate. Northernmost record c. 78° 20' N. in Isfjord, Spitsbergen (cf. Polunin 1933, field notes).

E. Arctic Distribution. Fairly general in the mainland regions of Quebec and northern Labrador in the eastern half of the extreme south, and again in eastern Baffin from Cumberland Gulf to Scotts Bay, 71° 10' N.¹

Occurrence. Only occasional throughout most of its limited area, growing in dry and sunny places, generally on sandy soil among grasses. Often markedly gregarious.

¹ The tentative report from Akpatok Island (Polunin 1934, p. 204) is to be discarded as wrong.

4. *C. BAFFIN*: o. "Scotts Bay" (Taylor 1863, p. 329, sub nom. *C. linifolia*); Cape Searle, Taylor (B*). *Cumberland Gulf*, Taylor 1860 (K) as "*C. linifolia*," (Kumlien 1879, p. 165); Kingnait, Taylor 1860 (K) as "*C. linifolia*"; Pangnirtung, 1936, brought in by Eskimos from the opposite side of the fiord.
7. *N. LABRADOR*: f. *Chidley Peninsula*, MacGregor 1905 (K) as "*C. rotundifolia* var. *linifolia*"; Cape Chidley, Bell 1884 (O,G,B) as "*C. Schuchzeri* var. *heterodoxa*", and then "*C. rotundifolia* var. *arctica*" scr. Gray; Burwell, Johansen 1927 (C) 1258 as "var. *arctica*" scr. Ostenfeld, Malte 1928 (O,G), Polunin 1934 and 6.
8. *N. QUEBEC*: o. Diana Bay, Ney and Courtright 1936; Wakeham Bay, Johansen 1927 (C) 1204 as "var. *arctica*," Malte 1927 and 8 (O,G,C), Polunin 1936; Sugluk, Malte 1933 (O,G); Cape Smith, Polunin 1936.

COMPOSITAE

266. *Solidago macrophylla* Pursh, Fl. Am. Sept. II, p. 542 (1814).

This species, which is plentiful at Hebron and elsewhere on the coast of Labrador to the south of our area, and also occurs at Port Harrison on the east coast of Hudson Bay, has been collected only once within our area—by C. S. Sewall at Bowdoin Harbour in the extreme southeast corner. The material from all these places belongs to the usual northern and mountain phase

var. *thyrsoides* (E. Meyer) Fernald in *Rhodora* VIII, p. 228 (1906).

The collection from within our area consists of three plants, all in the late flowering stage and varying from 18 to 40 cm. in height.

General Distribution. Eastern north America. From Labrador, Newfoundland, and northern New England westward to Hudson Bay and Lake Superior. Northernmost record Bowdoin Harbour, c. 60° 10' N. on the Atlantic coast of Labrador (Sewall 1927—specimen in Gray Herbarium).

E. Arctic Distribution. Just reaching the extreme southeast corner, where a single collection has been made a few miles within our boundary.

Occurrence. Evidently very rare. Not seen by me within the area, but a little to the south it grows characteristically on the grassy sides and angles of sheltered depressions that are deeply drifted over with snow in winter. The soil in which it roots is generally sandy and the drainage good, but the late melting of the snow retards flowering. At Hebron the species was also seen growing among scrub willows. All var. *thyrsoides*:

7. *N. LABRADOR*: r. Bowdoin Harbour, Sewall 1927 (G).

267. *Solidago multiradiata* Ait., Hort. Kew. III, p. 218 (1789).

My material of this polymorphic species itself shows great variation. The two collections from within our area, and all from Port Harrison and Hebron slightly to the south, belong to a reduced phase that contrasts strikingly with the large plants developed at Churchill and almost everywhere else. The northern plants, which have nothing at all to do with var. *arctica* (DC.) Fernald, are rarely as much as 20 cm. high, have narrow,

generally entire leaves, and show a tendency to darker, broader, and shorter ligules. However, having seen similar plants developed locally on the exposed coastal regions of Newfoundland, and being, moreover, uncertain as to just which form Aiton's original material ("*Nat. of Labrador*") represented, I will refrain from erecting any more varieties in this complex group. For certainly my plants all fall within the range of variation of *S. multiradiata*, as has been kindly verified for me by Prof. M. L. Fernald of Harvard and Dr. Stuart K. Harris of Boston University. The only two collections from within our area were made (1) by Sir Wm. MacGregor on "Chidley Peninsula 60°-60° 30' " N. in 1905, and (2) by Prof. Samuel C. Palmer of Swathmore College during the Bowdoin Expedition of 1929, in Frobisher Bay, southeast Baffin. The species is new to the entire Arctic Archipelago.

General Distribution. North America—the whole species from southeast Baffin southwards to Nova Scotia and westwards to Bering Strait. Chiefly subarctic and north-temperate, although invariably referred to as "arctic". Northernmost record Great Bear Lake, c. 66° N. in the District of Mackenzie (Richardson ex Hooker 1840, II, p. 5).

E. Arctic Distribution. Apparently limited to Frobisher Bay in southeast Baffin, and Chidley Peninsula in northernmost Labrador.

Occurrence. Rare and restricted, but this "Groundsel" is said by Jock Cormack and S. C. Knapp of the Hudson's Bay Company to be fairly common in places in Frobisher Bay, growing chiefly on rather dry, grassy flats and banks and almost always flowering plentifully.

5. S. BAFFIN: r. Frobisher Bay, north shore, Palmer 1929 (P).

7. N. LABRADOR: r. Chidley Peninsula, MacGregor 1905 (K).

Aster puniceus L.

This species is reported by Gardner (1937, p. 47) from Chesterfield—so far out of its normally accepted range that, in the absence of any material for confirmation, it seems impossible to uphold the record as more than a bare possibility.

268. *Erigeron eriocephalus* J. Vahl. in Fl. Dan. XIII, tab. mmccxcviii¹ (1840).

E. uniflorus of authors

The question of how to arrange the material from within our area belonging to this group has proved a great puzzle². Two obviously different forms are represented, even if they are connected by intermediates. The first is the coarse and conspicuously lanate, tousle-headed plant of relatively exposed habitats that was described by Jens Vahl from Greenland and figured in *Flora Danica* as *E. eriocephalus*, the plate being almost unmistakable. The second is the smaller, dark-headed plant of late-snow

¹ Numbered in the text "mmccclxxxix".

² That the problem was obscure even to the great Asa Grey is indicated by a note that he wrote shortly before his death on a sheet of *E. eriocephalus* collected by Robert Bell at Cape "Chudleigh" (Chidley) in the south of our area, which reads "No doubt=Vahl's pl. in Fl. Dan. But I still think it is the *E. uniflorus* running to *E. grandiflorus* or *lanatus* Hook. A. G., Feb. 1886".

patches, which will be treated below as *E. unalaschkensis*, and which, according to Holmgren (1919, p. 30), has twice as many chromosomes as *E. eriocephalus*. These two seem to represent different species (cf. Malte 1934, pp. 191-2), even if transitional (hybrid?) forms occur; they are certainly quite distinct in the field.

E. eriocephalus is now often treated as a variety or form of *E. uniflorus* (e.g., by Vierhapper 1906, p. 512, Lynge 1923, pp. 82-3, and Gelting 1934, p. 136), and this it may well be. However, having been unable to decide just what *E. uniflorus* is—even if it seems to be the common plant of south-west Greenland—I am reduced to following Rydberg (1910, p. 318) in assuming that it is absent from most, at least, of continental America, and then following Lindman (1910, pp. 161 *et seq.*) and Porsild (1920, p. 148) in upholding *E. eriocephalus* as a distinct species. Actually it seems to me that the material mentioned above as transitional between *E. eriocephalus* and *E. unalaschkensis* may be referable to *E. uniflorus* (even if it is not quite typical of this last), and that all three may possibly represent mere varieties of the same species. But for the time being I prefer to recognize the two “end lines” as distinct species and the intermediate material as merely transitional, for it is represented in my collections by only a few specimens, which, moreover, show gradations by almost imperceptible stages into *E. eriocephalus* on one hand and *E. unalaschkensis* on the other.

The usual difference in habitat of the two species that I am here taking up has been indicated above. Again Gelting (1934, p. 136) says of *E. eriocephalus* that in East Greenland it “Occurs exclusively on dry soil” and “Shuns prolonged snow-covering”, and of *E. unalaschkensis* (p. 135) that it is a “typical snow-patch plant”. This is confirmed by A. E. Porsild, who informs me that he has never seen the two growing together in West Greenland, and that there is presumably some mistake about Simmons’ mention (1913, p. 126) of their being “found together in many places”, and about the late Dr. Malte’s telling little anecdote (1934, p. 192) of the “mixed stand” and the young clergyman. However, in 1936 I was able to find the two growing side by side several times within our area, even if this is unusual, and thus had the satisfaction of confirming the observations of two of the chief inspirers of my present work. But the occurrence of the two plants together speaks to my mind in favour of their being regarded as distinct species, and not against it as is maintained by Simmons (*l.c.*).

E. eriocephalus in our area is very variable in such characters as the size, hairiness, and number of the heads, and in the shape and disposition of the involucre bracts. It not only “runs into” the much smaller and slenderer *E. unalaschkensis*, but at the other extreme occurs sometimes as big branched individuals with many heads to the axis. Indeed in the mature fruiting state it may be anything from less than 5 to more than 20 cm. high.

General Distribution. ? Circumpolar; Arctic and Subarctic. Northernmost record doubtful owing to confusion with the next species, but prob-

ably I. P. Koch Fiord, 82° 48' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 242).¹ *E. eriocephalus* certainly occurs nearly as far north as this in Ellesmere (See citations below).

E. Arctic Distribution. Fairly general as far north as northern Baffin, but north of that reported only from the vicinity of Discovery Harbour in northern Ellesmere.

Occurrence. Generally only occasional, but sometimes locally common. Grows chiefly on rather dry, gravelly areas among other herbs, almost always in places more exposed and with a less deep and lasting snow-covering than the next species, than which it is less markedly gregarious. Flowers and fruits very plentifully.

1. ELLESMERE: l. *Lady Franklin Bay*, Discovery Harbour, Hart 1876 (G,B) *fide* Ostenfeld—orig. as "*E. alpinum*," Greely (G) 33; "Bellot Island" (Hart 1880, p. 235).
3. N. BAFFIN: r. Pond Inlet and near (?Walker ex Hooker 1861, p. 83, sub nom. *E. alpinus*), Lavoie 1910 (O) 84852, Bazin 1935 (O,M).
4. C. BAFFIN: o. *Cumberland Gulf*, Kingnait, Taylor 1860 (K pars, B)²; Pangnirtung, Turner 1934 and 5 (K); Nettilling Fiord, Soper 1925 (O) 125697 apprg. *E. unalaschkensis*.
5. S. BAFFIN: f. *Frobisher Bay*, north shore, Palmer 1929 (P, pars with *E. unalaschkensis*) 642382. *South Coast*, Bell 1897 (O); Lake Harbour, Knapp 1933, Polunin 1934 and 6 incl. 387 1129 1235 1251 apprg. *E. unalaschkensis*; Bowdoin Harbour, Robinson 1922 (G) 26; Cape Dorset, Soper 1926 (O), Malte 1928 (O,G,C), Polunin 1934 and 6 incl. 317 apprg. *E. unalaschkensis*.
6. MELVILLE PENINSULA: o. Lyon Inlet, Hooper 1821 (L); Repulse Bay, Mathiassen 1922 (C) *fide* Ostenfeld. *Vansittart Island*, Danish Island, Freuchen 1922 (C) 34 *fide* Ostenfeld, and 266 as "*E. uniflorus* var. *eriocephalus*" scr. Ostenfeld.
7. N. LABRADOR: o. Cape Chidley, Bell 1884 (O,G); Burwell, Polunin 1934 and 6 incl. 891 1070 1087 1090 apprg. *E. unalaschkensis*.
8. N. QUEBEC: f. 'South shore of Hudson Strait', Low 1897 (O, pars with *E. unalaschkensis*) 70340; Cape Wales, Bell 1884 (O); Stupart Bay, Payne 1886 (T) 64; Wakeham Bay, Malte 1927 (O,C), Polunin 1936; Sugluk, Polunin 1936 No. 1514 apprg. *E. unalaschkensis*; Wolstenholme, Polunin 1934 and 6 incl. 212 apprg. *E. unalaschkensis*; Digges Island, Bell 1884 (B).
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 691 755. *Southampton Island*, South Bay, Sutton 1930 (G), Manning 1934 apprg. *E. unalaschkensis*.
10. W. COAST HUDSON BAY: o. Depot Island, Comer 1893 (G); Chesterfield, Malte 1928 (O,G,C) 120530 120556 apprg. *E. unalaschkensis*, Sutton 1930 (G), Gardner 1933 (G) apprg. *E. unalaschkensis*, Polunin 1936.

269. *Erigeron unalaschkensis* (DC.) Vierhapper in Beih. Bot. Centralbl. XIX, 2, p. 492 (1906).

E. uniflorus of authors

E. uniflorus L. var. *pulchella* Fries

This is by most modern authors (e.g., Hultén 1930, p. 161, Gelting 1934, p. 135, Malte 1934, pp. 190 *et seq.*, Grøntved 1936, p. 69, and Seidenfaden and Sørensen 1937, p. 175) maintained as specifically distinct from

¹ Reported as "*E. uniflorus* var. *unalaschkensis*", but Ostenfeld afterwards seems to have revised his determination, so that he later (1926, p. 61) records *E. eriocephalus* from between 80° and 83° N. in northwest Greenland, but no other member of the complex from north of 76°. This is in accordance with the usually more northern distribution of *E. eriocephalus*.

² Duplicate in Herb. Edinburgh. Whether Taylor's reports (1863, p. 328) of "*E. uniflorus*" from Cape Adair, Scotts Bay, and Cape Searle belong to this or the following species is, of course, impossible to determine in the absence of specimens.

E. uniflorus, and even came to be so considered by Fries (cf. Lynge 1923, p. 83). Not knowing the true bounds of *E. uniflorus* I will in deference to these authorities maintain *E. unalaschkensis* as a separate species, even if the distinction sometimes seems to be rather slender. This question has already been discussed under *E. eriocephalus*, to which our present species, varying as it does in the shape and colour (which largely depends on hairiness) of the involucre bracts, as well as in many minor characters, seems to show all stages of gradation—although most specimens are abundantly distinct. *E. unalaschkensis* in our area is a more markedly "southern" type than *E. eriocephalus*, even as it is more weak and exacting in habitat. It is generally neater and smaller in all its parts, being often less than 5 and rarely more than 10 cm. high, although it may in exceptional cases shoot up to around 15 cm. after flowering.

General Distribution. Circumboreal: chiefly in alpine and low-arctic regions. Northernmost record doubtful owing to confusion with other species, but I have myself collected it (*vide* A. J. Wilmott) north of 79° N. in Videfjord (Wijde Bay), Spitsbergen.

E. Arctic Distribution. General in the mainland and insular regions of the extreme south, but rare north of 65° N., not authoritatively reported from north of the Arctic Circle.¹

Occurrence. Fairly common in the extreme south. Grows chiefly in sheltered late-snow areas among grasses and other small herbs—typically in fairly dry or at least well-drained spots, but never in exposed places. Markedly gregarious, flowering plentifully and producing ripe fruit.

4. C. BAFFIN: r. *Cumberland Gulf*, Kingnait, Taylor 1860 (K, *pars*).
5. S. BAFFIN: f. *Frobisher Bay*, Palmer 1929 (P) 642381, 642382 *pars*; Point Brewster, Potter 1937; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 and 8 (O,G,C), Soper 1931 (O) 125752 apprg. *E. eriocephalus*, Polunin 1934 and 6; Cape Dorset, Malte 1928 (O,G,C).
6. MELVILLE PENINSULA: r. Five Hawser Bay, Parry 1821 (B,C) apprg. *E. eriocephalus*.²
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 34734; Burwell, Borden 1904 (O) 62998, Johansen 1927 (C) 1260 as "*E. uniflorus* var. *unalaschkensis*," Malte 1928 (O,G,C), Polunin 1931, 4, and 6, Potter and Brierly 1934 (G); Lady Job Harbour, Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. everywhere—numerous records from almost all localities.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 22 Nos. as "*E. uniflorum*"; Nottingham Island, Mackenzie 1886 (O) 34735. *Southampton Island*, York Bay, Parry 1821 (B); South Bay, Polunin 1936.
10. W. COAST HUDSON BAY: o. Chesterfield, Polunin 1936; Cape Eskimo, Macoun 1910 (O) 79267.

¹ Because of confusion with the last species, I am ignoring several reports (cf. Simmons 1913, pp. 126-7) of "*E. uniflorus*" and "*E. alpinus*" for which no specimens have been seen; likewise Macoun's mention (1906, p. 321) of *Erigeron debilis* from Port Burwell.

² There is a duplicate of this in Herb. Edinburgh.

270. *Erigeron compositus* Pursh, Fl. Am. Sept. II, p. 535 (1814).

This species has not been found within our area during the past half-century; indeed the two specimens that lie before me as I write in Cambridge, Mass., probably represent the only two collections by which it can claim inclusion in our flora. One is labelled "Winter Quarters H.M.S. *Discovery* H. C. Hart," and the other, in Asa Gray's hand, "Grinnell Land Lt. A. W. Greely, Lady Franklin Bay Expedn." Both were originally named *E. compositus*,¹ but a revision label by J. F. Macbride and E. B. Payson refers them to *E. trifidus* Hook. However, as *E. trifidus* is by these same authorities (1917, p. 77) stated to be "confined to the Central Rocky Mountains," and as it is but doubtfully distinguishable, at least specifically, from the heteromorphic *E. compositus*, I prefer to follow Simmons (1906, p. 24) and the recent writers on Greenland in referring the high-arctic material simply to this latter species.

Hart's and Greely's specimens are about 4 cm. high and all flowering well.

General Distribution. North America²—stretching, although with some considerable gaps, from Greenland and Ellesmere to southern Quebec and California. Arctic and alpine. Northernmost record Gunnar Andersson Valley, 82° 28' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 242).

E. Arctic Distribution. Known only from the immediate vicinity of Discovery Harbour in northeastern Ellesmere.

Occurrence. Very rare or at least very local. Not seen by me within our area, but in other northern lands growing chiefly on open, gravelly plains and ridges in exposed situations.

1. ELLESMERE: r. Discovery Harbour, Hart (G,K,B), Greely (G).

271. *Antennaria angustata* Greene, Pittonia III, p. 284 (1898).

A. glabrata (J. Vahl) Greene f. *tomentosa* E. Ekman

A. alpina of authors, not L.

A. congesta Malte

A. hudsonica Malte

Finding the shape of the leaves and involucre bracts, as well as the texture of the latter and the number of heads on the axis, to be very variable characters even in the same colony of otherwise identical plants, I have, after careful consideration and with the full approval of Prof. M. L. Fernald of Harvard and Miss J. L. Campbell of Radcliffe College (who have both made special studies of the group and have kindly inspected my material), reduced to synonymy the two above-mentioned species recently proposed from within our area by Dr. Malte, whose character of "pseudo-pleiocephalism" (1934a, p. 104) we are all at a loss to understand. To be sure, no male plant or element of *Antennaria* has been found within or even near our area, the species being all actively parthenogenetic and thus unable

¹ Greely's was, however, published as *E. compositus* var. *trifidus* Gray (See Greely 1888, II, p. 14).

² No member of the *Multifidi* section of this genus is known in Spitsbergen, contrary to the statement of Macbride and Payson (1917, p. 72).

to level out, by interbreeding, even the smallest mutations appearing in different strains. Such strains are by many immediately given specific rank; but on this question I have consulted Prof. Karl Sax of Harvard and Mr. Robert C. Foster the cytotaxonomist, and they agree that, in the absence of any definite advice from cytologists as to how to treat these "apomicts" and other parthenogenetic but plastic groups, we had better continue to regard them as we would normal plants, at least for taxonomic purposes (cf. also Gustafsson 1935). *Antennaria angustata* in our estimation thus becomes a rather variable and, for the group, common and widespread species—something of a "rubbish heap," perhaps, but not a regrettably heterogeneous one. To it are to be referred a large proportion of the arctic and subarctic specimens that were formerly recorded as *A. alpina*—which species, at least in the strict sense, is now assumed to be absent from North America. Thus, as early as 1898 (p. 284), Greene wrote of *A. alpina* that it "is not known to occur on the North American continent, unless perhaps a sheet....., said to have been obtained on the Arctic sea coast by Dr. Richardson, may represent it." Concerning these specimens of Richardson, Dr. Malte (1934a, p. 102) wrote, after examining the type of Linné's *Gnaphalium alpinum*, that they "do not belong to *A. alpina* . . ." but "to *A. angustata* Greene or a species closely related to it."

Antennaria angustata is characterized by Malte as "Dwarf, 2-4 cm. high," but this must be pointed out as an error. Thus, Greene's type material is, as his description implies, 4-10 cm. high, and it is very unusual to find specimens except in entirely immature stages that are less than 4 cm. high, and in our area the mature fruiting axis may occasionally exceed 15 cm. *A. angustata* is changeable at different stages of its life history—not only in the shape and texture of the middle and inner involucre bracts, but also in their colour, which may be anywhere from dull greyish to bright green, olivaceous, brown, or dark lead-colour. Almost the entire range of variation may sometimes be seen in the same clump, which makes this "colour character," to say the least, "somewhat unsatisfactory" (cf. Malte 1934a, p. 103). The species also varies considerably in the degree of inclusion or exertion of the style.

General Distribution. North America: from Greenland and the Arctic Archipelago to northern Labrador and Quebec, thence westwards at least to Keewatin. Northernmost record Pond Inlet, 72° 43' N. in Baffin (Polunin 1936, field notes).

E. Arctic Distribution. Probable complete in the extreme south, including the southernmost parts of the Arctic Archipelago, but little known north of 65° N., and only once found north of the Arctic Circle.

Occurrence. Common almost everywhere in the south, including southern Baffin, but only occasional north of 65° N. Although easily our most numerous *Antennaria*, it is rarely at all abundant except very locally—for the genus with us is little in evidence (never of paramount ecological importance over any area of more than a few square metres), even if it is represented by a number of different species. I have not been able in most cases to find any appreciable (or in a single case a really marked)

habitat preference exhibited by these various species, two or more of which are frequently to be seen growing mixed together. Most of them occur, as does *A. angustata*, chiefly on rather dry or at least well-drained slopes or flats in sunny and sheltered situations, where they are well covered with snow in winter. Sometimes they penetrate far into the snow-patches. All seem to be calcifugous, and all ripen abundant parthenogenetic fruits.

3. N. BAFFIN: r. Pond Inlet, Polunin 1936 No. 2472.
4. C. BAFFIN: o. *Cumberland Gulf*, Kingnait, Taylor 1860 (K, *pars*); Pangnirtung, Soper 1924 (O,G), Malte 1927 (O,G), Polunin 1934, Turner 1936 atypical.
5. S. BAFFIN: c.¹ Loks Land, Palmer 1929 (P) *fide* Fernald. *Frobisher Bay*, Sewall 1927 (G) incl. 303 as "*A. labradorica*" *scr.* Malte; Point Brewster, Potter 1937; north of York Harbour, Potter 1937; York Harbour, Potter 1937. *Resolution Island*, Acadia Harbour, Potter 1937. *South Coast*, Bell 1897 (O) 18744; Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Johansen 1927 (C) 1137, Malte 1927 (O,G) incl. 119191 119193 as "*A. hudsonica*" *scr.* Malte, Polunin 1934 and 6; Amadjuak, Bell 1897 (O); Seal Harbour, Robinson 1922 (G) as "*A. alpina* var. *canescens*"; Cape Dorset, Malte 1928 (O,G) 120332 120340 120344 120382 as "*A. hudsonica*" *scr.* Malte, Polunin 1934 and 6.
7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 11248 type specimen; Burwell, Borden 1904 (O) 62999, Macoun 1910 (O,G,C), Malte 1927 and 8 (O,G) incl. 120118 as "*A. congesta*" *scr.* Malte and 119185 119186 120172² as "*A. hudsonica*" *scr.* Malte, Polunin 1931, 4, and 6; Bowdoin Harbour, Potter and Brierly 1934 (G), Potter 1937; Grenfell Tickle, Potter and Brierly 1934 (G).
8. N. QUEBEC: c. Diana Bay, Knapp 1936; "Cape Wales" (ex Malte 1934a, p. 116); Stupart Bay, Payne 1886 (T) 62 *pars*; Wakeham Bay, Johansen 1927 (C) 1206, Polunin 1936; Sugluk, Malte 1933 (O) *fide* Fernald, Polunin 1936; Wolstenholme, Johansen 1927 (C) 1054, Malte 1928 (O,G) 120975 120993 as "*A. hudsonica*" *scr.* Malte, Polunin 1934 and 6; opposite Digges Island, Low 1898 (O, *p. min.* with *A. labradorica*) 23012; Cape Smith, Malte 1928 (O,G) 120906, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 202 235 416 417 418. *Southampton Island*, South Bay, Polunin 1936.
10. W. COAST HUDSON BAY: o. Chesterfield, Malte 1928 (O,G) 120507 as "*A. hudsonica*" *scr.* Malte, Polunin 1936.

272. *Antennaria canescens* (Lange) Malte in Rhodora XXXVI, p. 109 (1934).

This, in its stoloniferous habit leading to the formation of more or less dense mats, in its lastingly bluish grey canescent leaves, in its small capitula and constantly pleiocephalous habit, and in its very narrow and dark middle and inner involucre bracts, is a species perfectly distinct from the true *A. alpina*. I, accordingly, take it up as Dr. Malte named and defined it, even if the plate in *Flora Danica* (tab. mmdeclxxxvi, fig. 1, 1869) is quite unconvincing, and Lange's description (*ibid.* Fasc. XLVII, p. 9) of his "Variet: β , *canescens*! foliis utrinque cano-tomentosis" is, therefore, insufficient. *Antennaria canescens* is also distinct in almost every detail

¹ Because of the previous confusion with closely related species, I have refrained from citing several of the records of "*A. alpina*" collected together by Simmons (1913, p. 127) where no specimens have been seen, even if the majority probably belong to the present species.

² Malte (1934a, p. 116) cites under this same number specimens of both *A. angustata* and his "*A. hudsonica*".

from *A. angustata*, as must be apparent to all who have the good fortune to see these delightful species growing together, as they often do in eastern subarctic America. *A. canescens* is usually the smaller, rarely exceeding 10 cm. in height even in the mature fruiting stage.

General Distribution. Eastern North America, stretching from Greenland and the Arctic Archipelago to northern Labrador and Quebec.¹ Northernmost record doubtful owing to confusion with other species, and may well be north of 72° N. in West Greenland, but the farthest north wholly typical material that I have seen was from Nugsuak Peninsula, c. 70° 10' N. in West Greenland (specimen in Gray Herbarium, labelled "*Antennaria alpina* (L.) Gaertn. Collected by the Cornell Party on the Peary Voyage of 1896").

E. Arctic Distribution. Apparently limited to the eastern half of the extreme south¹, being fairly general in the mainland regions of Quebec and Labrador and extending through southern Baffin to Cumberland Gulf.

Occurrence. Locally common as far north as the south coast of Baffin, but only twice collected north of the 65th parallel. Occurs chiefly on sunny, well-drained, and most often gravelly, slopes among other herbs—frequently in company with the last species, but showing a tendency to penetrate still farther into the snow-patches. Sometimes its flowering is retarded and fructification prevented by the late melting of the snow, but generally it manages to produce ripe fruit in plenty.

4. C. BAFFIN: f. *Cumberland Gulf*, Kumlien (G, *pars* with *A. compacta*) as "*A. alpina*"; Kingnait, Taylor 1860 (K and B *pars*) as "*A. alpina*" and "*Gnaphalium alpinum*".
 5. S. BAFFIN: f. *Frobisher Bay*, Point Brewster, Potter 1937; York Harbour, Potter 1937. *South Coast*, Lake Harbour, Malte 1927 (O), Polunin 1936.
 7. N. LABRADOR: o. Burwell, Malte 1928 (O,G), Polunin 1934 and 6.
 8. N. QUEBEC: f. *Diana Bay*, Knapp 1936; *Wakeham Bay*, Polunin 1936; *Wolstenholme*, Polunin 1936; *Cape Smith*, Polunin 1936.
- (W. COAST HUDSON BAY: ?¹ Chesterfield (ex Polunin 1936, notes).)

273. *Antennaria labradorica* Nutt. in Trans. Am. Phil. Soc. N. S. VII, p. 406 (1841).

A. angustifolia E. Ekman, not Rydberg
A. Friesiana E. Ekman in part²

The true identity of this species remained in doubt until 1931, when Dr. M. O. Malte and Prof. M. L. Fernald found in the British Museum "three fragments from Nuttall, which, until a fuller specimen is located, must stand as the type of the species" (cf. Fernald 1931, p. 224). It now appears to be by far the most northerly ranging member of the genus, all the material that I have seen from northwest Greenland being referable to it, although unfortunately Simmons' specimen from Ellesmere is not available for inspection and confirmation of my conjecture that it, too, belongs to *A. labradorica*. This species in our area is most often 10 or 12,

¹ Unless a specimen that I have a note about seeing in the collection of the Medical Officer at Chesterfield on the west coast of Hudson Bay can be properly confirmed.

² I.e., as to the Greenland plant, but not as to the name-bringing synonym—cf. Malte (1934a, p. 113).

and rarely more than 15, cm. high when mature, and must be recorded as varying considerably in the size and shape of the leaves. These may be as much as 4-5 mm. broad in some far northern specimens, which with further material may perhaps prove to be varietally distinct. The sheet No. 79268 from Wager Inlet¹, mentioned by Greene (1911, p. 43) as seeming "to represent another undescribed species", belongs to *A. labradorica*, which, as Dr. Malte rightly states (1934a, p. 114), "was much misunderstood by Greene."

General Distribution. North America, stretching from Greenland and the Arctic Archipelago to Labrador and Quebec, and westwards at least to Keewatin. Northernmost record Marshall Bay, 79° N. in Inglefield Land, West Greenland (J. Noe Nygaard, Jubilæums Expeditionen Nord om Grønland 1920-23, sub nom. *A. alpina* but *fide* Ostenfeld as *A. angustifolia*, Fernald as *A. Friesiana*, and Malte as *A. labradorica*—specimen in Gray Herbarium). Simmons' "*Antennaria alpina*" from about the same latitude in nearby eastern Ellesmere probably belongs also to *A. labradorica* (cf. Simmons 1906, p. 24).

E. Arctic Distribution. The widest ranging member of the genus in our area, being apparently general in the south and widespread as far north as Devon Island. North of this only one collection of *Antennaria* has been made, and it has not been confirmed as belonging to the present species.

Occurrence. Never really common in the south and rather rare in the north. Grows in small colonies in situations similar to the preceding two species, but also tends to occupy areas that are less sheltered and, consequently, more barren. Flowers and fruits plentifully.

(ELLESMERE: ? "Hayes Sound, Flagler Fiord" (Simmons 1906, p. 24, sub nom. *A. alpina*).)

2. DEVON, ETC., ISLANDS: r. Dundas Harbour, Polunin 1934 Nos. 781 784 789.
3. N. BAFFIN: r. Pond Inlet, Polunin 1934, Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O,G).
4. C. BAFFIN: r. Cumberland Gulf, Kingnait, Taylor 1860 (K and B *pars*) as "*A. alpina*"; Pangnirtung, Malte 1927 (O,G).
5. S. BAFFIN: o. Frobisher Bay, Sewall 1927 (G); Point Brewster, Potter 1937. South Coast, Lake Harbour, Polunin 1936; Amadjuak, Bell 1897 (O) 18745 as "*A. angustata*."
6. MELVILLE PENINSULA: f? Fury and Hecla Strait, Parry 1822 (C); Lyon Inlet, Angel 1933 (W, *pars* with *A. pygmaea*) 77 (1433018) as "*A. alpina*"; Duckett Cove, Parry (B,C)²; between Capes McLaren and Martineau, Angel 1933 (W) 65 (1433006) as "*A. alpina*."
7. N. LABRADOR: r. Burwell, Polunin 1936.
8. N. QUEBEC: f. Stupart Bay, Payne 1886 (T, *pars* with *A. angustata*) 62; Wakeham Bay, Polunin 1936; Sugluk, Malte 1933 (O,G) *fide* Fernald, Polunin 1936; Wolstenholme, Polunin 1936; opposite Digges Island, Low 1898 (O, *pars* with *A. angustata*) 23012.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Southampton Island, White Island, Angel 1933 (W) 39 (1432980) as "*A. alpina*."³
10. W. COAST HUDSON BAY: o. Wager Inlet, Macoun¹ 1910 (O) 79268; Chesterfield, Polunin 1936, (Gardner 1937, p. 47).

¹ I.e., Wager Bay, and erroneously given by Malte (1934a, p. 113) as collected by himself.

² Duplicate specimen in Herb. Edinburgh.

³ Cf. Polunin (1938b, p. 102).

274. *Antennaria burwellensis* Malte in Rhodora XXXVI, p. 111 (1934).

I was long in doubt as to the validity of this species, and have indeed been advised to include it under *A. angustata*, of which Dr. Malte's "type" of *A. burwellensis* seemed to be young specimens (collected July 25-8). However, in 1934 and again in 1936 I was able to find mature specimens (not late-snow plants) at the end of September that had the same appearance, all differing from *A. angustata* in the low, leafy stem, poorly developed, squalid-looking pappus, and stoloniferous habit, so that I now have little hesitation in upholding Dr. Malte's species as a good one. It is still known only from the type locality, Port Burwell in the extreme north of Labrador, where it is the rarest of the several species that in some other cases abound, making this place the richest by far in the numbers of individuals of *Antennaria* that I have seen anywhere in our area.

General Distribution. Eastern North America, and so far known only from the type locality, Port Burwell, 60° 25' N. in the extreme north of Labrador.

E. Arctic Distribution. Limited to Port Burwell in the southeastern corner.

Occurrence. Rather rare in its only station. Grows on fairly damp soil in rocky ravines that are covered over with snow in winter. It is 3-8 cm. high and flowers plentifully, but the fruits do not seem to be any good, even from plants growing in areas where the snow melts early.

7. N. LABRADOR: r. Burwell, Malte 1928 (O,G) 120087 120125, Polunin 1934 and 6 Nos. 903 2241 2243.

275. *Antennaria compacta* Malte in Rhodora XXXVI, p. 111 (1934).

This rare species has the general appearance and long-exserted, deeply 2-cleft style of the Rocky Mountain *A. candida* Greene, and is also very reminiscent of *A. canescens* (See above). Until recently it was known only from the type locality, Bernard Harbour, District of Mackenzie, but now must be recorded as extending to the south shore of Hudson Strait and to Lake Harbour and Cumberland Gulf in Baffin, to which (as to the rest of the Arctic Archipelago) it is of course new. Quite recently I found it at altitudes of around 1,000 metres on Akuliaruserssuaq Mountain in south-west Greenland (cf. Polunin 1937, p. 2, and 1938c, p. 90).

It ought to be mentioned that, taken as a whole, the material is far from uniform in appearance, but that the differences lie mostly in superficial vegetative characters, which may vary with the changeable habitat of this species (See below). That the specimens cited below all belong to *A. compacta*, neither Miss Campbell nor I have any serious doubt.

General Distribution. North America, stretching from southwest Greenland and the Arctic Archipelago to northern Labrador and Quebec. Also in the District of Mackenzie, N.W.T., where it has its northernmost known station at Bernard Harbour, 68° 47' N. (Frits Johansen 1915—specimen in Herb. Ottawa).

E. Arctic Distribution. Widespread in the eastern half south of the Arctic Circle, from Cumberland Gulf in Baffin southwards to the mainland of northernmost Labrador and Quebec.

Occurrence. Rare, and growing singly or in very small colonies. My Lake Harbour plant was a lone one growing with *A. angustata* and *A. canescens* in their typical sheltered and well-drained habitat. At Pangnirtung I found it only above 1,000 metres on the mountains, growing in exposed situations among xerophytic Carices and grasses on steep slopes near the snow-line. These specimens, like all the others that I have seen, were growing 5-15 cm. high; they had flowered and apparently produced an abundance of ripe fruit.

4. C. BAFFIN: o. Cumberland Gulf, Kumlien (G pars with *A. canescens*, N?); Kingnait, Taylor 1860 (K and B pars with *A. angustata*, *A. canescens*, and *A. labradorica*) as "*A. alpina*"; Pangnirtung, Polunin 1934 Nos. 585 586.
5. S. BAFFIN: r. Lake Harbour, Polunin 1936 No. 1243.
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O) 11247 as "*A. angustata*" scr. Malte.
8. N. QUEBEC: r. Cape Wales, Bell 1884 (O) 44441 as "*A. angustata*" scr. Malte.

276. *Antennaria nitens* Greene in Ottawa Nat. XXV, p. 42 (1911).

This extraordinary, almost glabrous species is still known only from the type locality, which lies just within our area, and where it was collected by J. M. Macoun on September 8, 1910. As recorded by Greene (*l.c.*) "The plants were quite past flowering at that date and had even shed most of their pappus." They were "apparently densely matted" and possessed of axes 5-10 cm. long. How close they come to the other glabrate forms such as the more recently proposed *A. Porsildii* I cannot say, as I have had no opportunity of comparing specimens.¹

General Distribution. Eastern North America, and so far known only from the type collection from Wager Bay, 65° 30' N. on the Hudson Bay coast of Keewatin.

E. Arctic Distribution. Apparently limited to a single locality on the west coast of Hudson Bay near the southwest corner.

Occurrence. Very rare. I know nothing of the habitat or ecology of this species beyond what has been said above.

10. W. COAST HUDSON BAY: r. Wager Bay, Macoun 1910 (O,G) 79269 type.

277. *Antennaria pygmaea* Fernald in Rhodora XVI, p. 129 (1914).

This attractive and characteristic little plant is supposed to be restricted to the northernmost parts of the Labrador Peninsula, where it varies in little except the colour of the involucre bracts, and in the height, which is generally between 3 and 6 cm. It must, however, be noted as not by any means always monocephalous, there being quite frequently a small lateral capitulum below the usual large terminal one. I have also a note

¹ Recently in Herb. Edinburgh I saw an almost glabrous *Antennaria* labelled "Frequent Wilcox Point and Cape Searle Taylor's Arctic Plants", but the specimen probably came from the former locality, which is on the Greenland side of Davis Strait, where glabrate species are well known.

to the effect that I once identified one scrap as *A. pygmaea* among specimens of *A. labradorica* in the United States National Herbarium at Washington, D.C., which had been collected on Melville Peninsula (J. B. Angel, southeast tip of Lyon Inlet, August 21, 1933, No. 77 (Washington Herbarium, No. 1433018), sub nom. *A. alpina*).

General Distribution. Eastern North America; subarctic. Northernmost parts of the Labrador Peninsula, probably extending westwards to Melville Peninsula (*See above*). Northernmost record ? southeast tip of Lyon Inlet, c. 66° 15' N. in Melville Peninsula (Angel 1933, specimen in Washington Herbarium, sub. nom. *A. alpina*—hasty determination needs verification). The species certainly occurs as far north as Port Burwell, 60° 25' N. in Labrador (Malte 1928, Polunin 1936—*See citations below*).

E. Arctic Distribution. Known with certainty only from the mainland of Labrador in the extreme southeast, but probably extending westwards to Melville Peninsula (*See above*).

Occurrence. Rather rare at Port Burwell and not fully confirmed as occurring elsewhere within our area. Grows more or less gregariously on rather damp, mossy ledges in sheltered ravines, or sometimes in drier areas mixed with other species of *Antennaria*.

(MELVILLE PENINSULA: ? Lyon Inlet, Angel 1933 (W, *pars* with *A. labradorica*) 77 (1433018).)

7. N. LABRADOR: r. Burwell, Malte 1928 (O,G,C) 120108 120111, Polunin 1936 Nos. 1072 1086.

278. *Antennaria arenicola* Malte in Rhodora XXXVI, p. 110 (1934).

I am still a trifle uneasy about my policy of maintaining this as a separate species, for it comes very near to the less densely caespitose, southern phases of *A. labradorica* on one hand, and to the more lanate states of *A. ungavensis* (Fernald) Malte on the other.¹ Indeed the affinity, or at least the general resemblance, in the latter case is so close that of the eight more or less complete plants in Dr. Malte's type collection ("Sandy flat, Port Harrison . . . [120714 August] 18-20, 1928") of his *A. arenicola*, three belong to *A. ungavensis*, including, as has been kindly confirmed for me by Prof. Fernald, the sheet in the Gray Herbarium marked "cotype" in Dr. Malte's own hand. The other sheet in the Gray Herbarium bears only *A. arenicola*, and the one retained at Ottawa and designated as the type bears three plants of this and two of *A. ungavensis*. Luckily the description was taken for the most part from specimens of *A. arenicola* and so does not need any detailed emendation; it should be noted, however, that the appendages on the upper cauline leaves in this species are oblong and scarious. In *A. ungavensis* they are much narrower—often almost subulate—which character affords a ready means of distinguishing the two.

When visiting Port Harrison in 1936 I was unable to find any more material of *A. arenicola*, although hundreds of *Antennaria* plants belonging to other species were examined, including several dozens of *A. ungavensis*.¹

¹ See Part IV of the present series.

However, a little to the north on the other side of Hudson Bay, a single specimen of *A. arenicola* was found at Chesterfield, extending the known range of this species nearly 700 miles, and necessitating its inclusion in our Eastern Arctic flora. The plant was 15 cm. high and its fruits were almost ripe on August 19, 1936.

General Distribution. Eastern North America; subarctic. Known only from northern Quebec and Keewatin, on the east and west coasts, respectively, of Hudson Bay. Northernmost record Chesterfield, 63° 20' N. on the west coast of Hudson Bay (Polunin 1936, field notes).

E. Arctic Distribution. Known only from the one locality of Chesterfield, on the west coast of Hudson Bay near the southwest corner.

Occurrence. Very rare. Growing on a rather dry, sandy depression among rocks.

10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936 No. 2137.

279. *Antennaria isolepis* Greene in Ottawa Nat. XXV, p. 41 (1911).

The type collection from Cape Eskimo and another from "Chidley Peninsula 60°-60° 30' " N. are the only ones of this species from within our area. The Chidley material was gathered by Sir William MacGregor in 1905, the type collection by James M. Macoun five summers later. Of the latter, Greene (*l.c.*, p. 42) says "I suspect that the plant here described is a male", before mentioning various characters which "would seem to indicate as much". Actually, the plants are in most cases clearly female, having the styles included in the corolla tube, and in none even of the youngest have I been able to find any vestige of anthers, either in Macoun's or any other collection of the species, so that I fully support Dr. Malte in his statement (1934a, p. 108) that "Only the female plant [is] known"—cf. also Fernald who says (1924, p. 102) "Staminate plant unknown". The Cape Eskimo plants, like my own collections from Port Harrison on the other side of Hudson Bay a little to the south of our area, vary from 8 to 16 cm. in height and flower and probably fruit abundantly.

General Distribution. Boreal America, from Labrador and northern Quebec to Keewatin and perhaps farther west¹. Northernmost record Kin-garyuaik, 61° 50' N., 95° 24' W. in Keewatin (Güssow ex Malte 1934a, p. 108).

E. Arctic Distribution. Limited to two localities in the extreme south, the one in northern Labrador and the other in Keewatin.

Occurrence. Very rare. Nothing is known of the habitat of the two collections from within our area, but to the south the species chiefly inhabits sandy slopes that are bound by xeromorphic grasses and well covered with snow all winter². It is generally gregarious.

7. N. LABRADOR: r. *Chidley Peninsula*, MacGregor 1905 (K) as "*A. dioica*".

10. W. COAST HUDSON BAY: r. Cape Eskimo, Macoun 1910 (O,G,N) 79270 type.

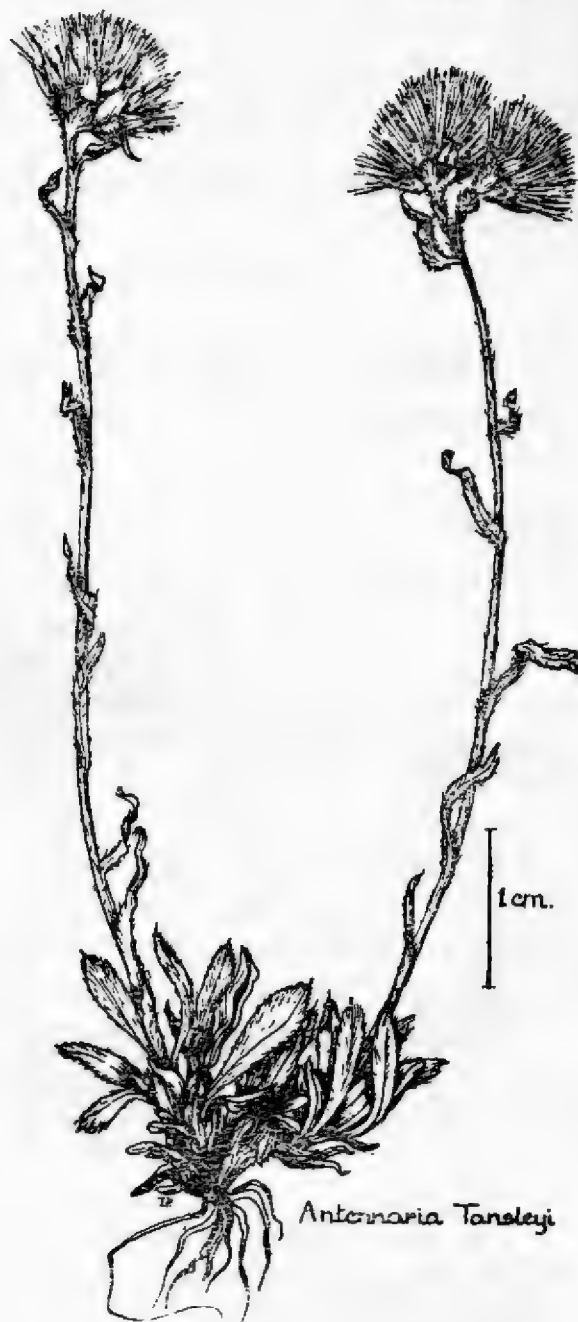
¹ I have seen a somewhat doubtful specimen (leg. H. M. Raup, E. C. Abbe, and G. Robbins 1932, No. 4066a) from Mount Selwyn, B.C.

² See Part IV of the present series.

280. *Antennaria Tweedsmuirii* n. sp.

Planta pusilla densos floccos formans, caespitosa vel paululum humifusa valde brevibus assurgentibus stolonibus. Foliis basibus multum confertis, linearibus-lanceolatis, paululum mucronatis, 0.6-1.5 cm. longis, 0.1-0.2 cm. latis, utrinque canescentibus lanatis, per occasionem supra-glabratis factis aetate proVectis. Caulibus erectis, 3-5 cm. altis, valde frondiferis, monocephalis vel per occasionem parvo secundo capitulo a latere inserto.

PLATE VII

*Antennaria Tweedsmuirii**Antennaria Tansleyi*

Foliis caulinis c. 12, inferioribus utrinque lanatis, superioribus glabra late oblonga scariosaque appendicula, plerumque fulva. Capitulo late pandente, subgloboso; involucri 4-5 mm. alto, lanato sed subviridi ubi proximo pediculo, squamis exterioribus fulvis obscuris, ovatis, obtusis; squamis interioribus candidis fulvis vel fere albis, lanceolatis vel linearibus-lanceolatis, acutis. Pappo colore hebeti albo, sursum directis dentibus. Stylo plerumque potius longo-exserto, profunde duo-fissuro. Planta mascula ignota. Type

in National Herbarium of Canada at Ottawa: cotypes in Gray Herbarium of Harvard University, Fielding Herbarium of Oxford University, and British Museum: *Nicholas Polunin*, Cape Smith, east coast of Hudson Bay, No. 1374, August 3, 1936. Known only from the type locality. Figure on Plate VII.

This species is highly characteristic and abundantly distinct from any other. In general appearance it is perhaps most reminiscent of the recently described *A. columnaris* Fernald of the limestone barrens of western Newfoundland, which differs from *A. Tweedsmuirii* most noticeably in its larger and more numerous and conspicuously appendaged cauline leaves, its much broader and shorter radical leaves, and in its almost constantly pleiocephalous habit.

General Distribution. Eastern North America; subarctic. Known only from Cape Smith, 60° 49' N. on the east coast of Hudson Bay (Polunin 1936, field notes).

E. Arctic Distribution. Known only from Cape Smith on the east coast of Hudson Bay in the central part of the extreme south.

Occurrence. Very rare—only a single colony found. This was on a dry, sandy flat dominated by grasses, about 150 metres back from the sea; over some 100 square metres of this the plant was fairly abundant.

8. N. QUEBEC: r. Cape Smith, Polunin 1936 No. 1374 type.

281. *Antennaria Tansleyi* n. sp.

Planta parva, laxe caespitosa vel paululum humifusa, rostellis basibus sessilibus vel subsessilibus, foliis earum late oblanceolatis vel spatulatis, 0.8-2.0 cm. longis, 0.2-0.4 cm. latis, abrupte astricatis ad apicem et ibi ferentibus mucronem distinctum, utrinque canescentibus-lanatis sed quandoque supra-glabratis factis aetate proVectis. Caulibus plus minusve erectis, 6-15 cm. altis, plerumque 4-8 foliis caulinis, suffuscis glabris oblongis scariis appendiculis, generatim monocephalis sed saepe 1-2 capitulis supplementis, in axillis foliorum caulinarum superiorum latis; capitulo turbinato, involucri 6-7 mm. alto, infra paululum lanato; bracteis involucri exterioribus caliginosis, mediis interioribusque ovatis vel lanceolatis, acutis, membranaceis candidis cinereis vel albis saltem ad apicem; pappo colore hebeti albo; stylo incluso vel apice bifido vix exserto. Planta mascula ignota. Type in British Museum: *Nicholas Polunin*, Wolstenholme, Hudson Strait, No. 1272, August 1, 1936. Figure on Plate VII.

This species combines to such an extent the more spectacular characters of *Antennaria pygmaea* and *A. angustata* as to suggest that it may possibly have arisen as a result of their hybridization. However, no male plant of either *A. pygmaea* or *A. angustata* has ever been found, and so, all the *Antennarias* in our area being actively apomictic, *A. Tansleyi* must be erected as the separate entity that in the field it forcibly gives the impression of being.

General Distribution. Eastern North America; subarctic, ranging from the southernmost parts of the Arctic Archipelago to northern Quebec and Keewatin. Northernmost record Coral Harbour, 64° 13' N. in South Bay, Southampton Island (Polunin 1936, field notes).

E. Arctic Distribution. Known only from our area, where it is widespread in the Hudson Strait and northern Hudson Bay regions in the extreme south.

Occurrence. Only occasional in its limited area. Grows among other herbs on dry, grassy slopes and flats, in warm, sunny situations that are sheltered and well covered with snow in winter. Flowers abundantly.

5. S. BAFFIN: r. Lake Harbour, Polunin 1936.
8. N. QUEBEC: o. Sugluk, Polunin 1936; Wolstenholme, Polunin 1936 No. 1272 type.
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, South Bay, Polunin 1936.
10. W. COAST HUDSON BAY: r. Chesterfield, Polunin 1936.

282. *Gnaphalium supinum* L., Syst. Nat. ed. 12, p. 234 (1768).

The dear little Mountain Cudweed has not previously been recorded from our area, although I have found it in three different summers at Port Burwell in the extreme southeast. These plants flower and fruit well enough, but scarcely rise at all above the surface of the ground—being generally a bare 1 cm. high and never exceeding 3 cm. in our area, although they may be taller at Port Harrison farther south. The terminal capitula tend to run a little larger in this Burwell and Harrison and other New World material, but beyond this I can see no difference from the familiar dwarf of the Swiss and Norwegian Alps.

General Distribution. Subarctic and alpine; Europe, Greenland, and eastern North America southwards to Mount Washington, N.H., and westwards to Port Harrison on the east coast of Hudson Bay. "Nordgrense på Magerøya, 71° 10' " N. off the north coast of Scandinavia (Dahl 1934, p. 404).

E. Arctic Distribution. Apparently limited to one locality (Port Burwell) in northern Labrador in the extreme southeast.

Occurrence. Rather rare in its one station. Grows gregariously on damp soil or among bryophytes in the beds of rocky ravines that are filled with snow in winter. It is in our area a marked late-snow species, inhabiting those innermost zones that are almost devoid of higher plants, although in Lapland it is often to be found also in exposed fjældmark areas.

7. N. LABRADOR: r. Burwell, Polunin 1931, 4, and 6.

283. *Gnaphalium norvegicum* Gunn., Fl. Norveg. II, p. 105 (1772).

It is only with considerable hesitation that I include this species in our flora, not merely because I have seen no specimens of it from nearer than Ramah, on the Atlantic coast of Labrador, but also because the written records of Taylor (on the strength of which it was included in the flora of the Arctic Archipelago by Simmons—1913, p. 127) are questioned by Porsild for Greenland (1920, p. 152). This, and the fact that Taylor (1863, p. 328, sub nom. *Gnaphalium sylvaticum*) cites no less than four separate localities on the east coast of Baffin, where the species has not otherwise been found, although admittedly the region is but little explored,

makes one wonder whether he may not have had some other plant in mind, although just what this could be I do not know. For *Gnaphalium norvegicum* is a very distinct and striking plant, common in southwest Greenland, which I think even Taylor could scarcely confound with any other that grows in or near our area; accordingly, I will include his records, hoping that they will be substantiated in the future.

General Distribution. Subarctic and alpine Europe and eastern North America, including Greenland. Northernmost record ? c. 72° N. in West Greenland (cf. Simmons 1913, p. 127). This needs substantiation, but the species certainly occurs as far north as 71° in the extreme north of Scandinavia (Polunin 1930, field notes).

E. Arctic Distribution. Reported from four localities on the east coast of Baffin, from Cumberland Gulf to Cape Adair, but all need verifying.

Occurrence. Needs confirmation, but probably correct although not seen since about 1860.

(C. BAFFIN: ? "Cape Adair, Scotts Bay, and Cape Searle" (Taylor 1863, p. 328, sub nom. *Gnaphalium sylvaticum*). "Cumberland Gulf" (Taylor 1863, p. 328, sub nom. *G. sylvaticum*).)

284. *Matricaria inodora* L., Fl. Suec. ed. 2, p. 297 (1755).

As was recently pointed out by Malte (1934, pp. 192-3), the oldest varietal name for the northern phase of this plant, which includes all the material from within our area, is clearly var. *nana* (Hook.) Torr. and Gray (Fl. N. Am. II, p. 412 (1843)). However, Hooker's characterization of his original *Pyrethrum inodorum* β *nanum* was merely "caule unifloro," and Torrey and Gray (*l.c.*), in making the transfer to *Matricaria* (probably with only one or two specimens before them), did little more than repeat this in saying " β . ? *nana*: stems simple, with a solitary head." Actually this variety, which is well marked by the dark involucre and generally larger heads, often has the stems branched and many-headed even in its northernmost stations, these larger, rampant plants being moreover so frequently mixed with smaller, unbranched ones as to indicate that the sole diagnostic character given by Hooker is of absolutely no value. Hence I must offer

var. ***nana*** (Hook.) Torrey and Gray, *emend. nov.*
(*Matricaria grandiflora* (Hook.) Britton, not Poir.)

A forma typica differt caulibus humilibus, raro plus quam 20 cm. longis, uno vel paucis plerumque majoribus capitulis latis caliginosis fulvis vel subnigris marginibus bracteis involucrelibus.

This dark and low, northern phase seems to be paralleled by the subarctic *Achillea Millefolium* var. *nigrescens*. In our area it is sometimes bushy and as much as 20 cm. high; but more often it remains lower and, at the other extreme, may be reduced to a single small capitulum on a tiny stem barely 2 cm. high. It always flowers abundantly—often until late in the summer and in the northernmost localities sometimes until winter comes again—and generally ripens fruit.

This plant, perhaps because of its obvious alliance with the familiar "Scentless" or "Stinking" Mayweed of their native English cornfields,

was brought back by the early navigators and explorers from almost all parts of the Arctic Archipelago, where there can be practically no doubt that it is fully native. I mention this because it was listed by Ostenfeld (1926, p. 18, sub nom. *M. inodora* var. *grandiflora*) as "Probably introduced by the Norsemen" to Greenland, although this supposition has to a large degree been discounted by Porsild (1932, pp. 72-4, sub nom. *Matricaria ambigua* (Ledeb.) Kryl.), Gelting (1934, p. 139), and others.

General Distribution. The whole species circumpolar, wide ranging latitudinally (partly introduced?). Northernmost record Granatelv, 74° 10' N. in East Greenland (Gelting 1934, p. 139).

E. Arctic Distribution. General around coasts in the extreme south and widespread northwards to northern Baffin, but not found north of Lancaster Sound.

Occurrence. Frequent in the south, but rare or very local towards its northern limit, although markedly gregarious. Grows mostly on sea-shores a little above high-tide mark—chiefly in damper depressions where the beach is of sand, or in the upper ones of salt-marsh communities where the situation is sheltered and the surface bound by *Puccinellias*, etc. Like most plants showing a preference for halophilous habitats, it is also to be found in manured or otherwise disturbed areas, being especially prevalent around Eskimo ruins.

3. N. BAFFIN: 1. Pond Inlet and near, Lavoie 1910 (O) 84846 as "*M. inodora*," and seven others (O,M,C), incl. Soper 1923 (O) 111687 111688 as "*M. inodora* var. *grandiflora*"; Tern Island, Hooper 1822 (L), Parry (B,C).
5. S. BAFFIN: 1. Queens Cape, Robinson 1922 (G) 53; Cape Dorset, Burwash 1924 (O), Soper 1926 (O), Malte 1928 (O,G,C), Polunin 1934 and 6.
6. MELVILLE PENINSULA: o. Neerlo Nakto, Parry (C); Igloolik, Parry (B*); Repulse Bay, Hooper (L, note only), Parry (B) as "*Chrysanthemum grandiflorum*."
8. N. QUEBEC: f. Diana Bay, Knapp 1936 (*1); "Stupart Bay" (Payne ex Lawson 1887, p. 211); Wakeham Bay, Malte 1928 and 33 (O,G,N) 120241 126933, Polunin 1936; Sugluk, Polunin 1936; "Eskimo Village of Hyla" (Bell ex Macoun 1886, p. 552); Digges Island, Bell 1884 (O,B); near Icy Harbour, Low 1898 (O) 23018 as "*Matricaria nana*"; Cape Smith, Polunin 1936.
9. ISLANDS IN HUDSON, ETC., BAYS: f. Nottingham Island, Mackenzie 1886 (O), Johansen 1927 (C) 1096; Mansel Island, Bell 1884 (O,G). *Southampton Island*, (?Lyon ex Hooker 1825b, p. 191, sub nom. *Pyrethrum grandiflorum*); South Bay, Malte 1928 (O,G) 120616 120619 120654, Sutton 1930 (G), Manning 1934, Polunin 1934; Cape Low, Baird 1936.
10. W. COAST HUDSON BAY: f. Island south of Wager Bay, Freuchen 1923 (C) 672; Whale Point, Comer 1894 (G); Depot Island, Freuchen 1923 (C) 674; Chesterfield, Malte 1928 (O,G,C) 120468 120496 120539, Gardner 1933 (G), Polunin 1936; Cape Eskimo and near, Macoun 1910 (O,G,C) 79273 as "*M. inodora*," Birket-Smith 1923 (C) 1049.

285. *Chrysanthemum arcticum* L., Sp. Pl. ed. 1, p. 889 (1753).

In marked contrast with the situation in the North Pacific region where "several undoubtedly hereditary forms occur" (cf. Hultén 1930, p. 174), this peculiar species seems to vary rather little in our area, although the outline and size of the leaves, as in most salt-marsh plants, is far from

¹ See Polunin (1937c, p. 114).

constant. Hultén (*l.c.*) mentions that "The Hudson Bay plant approaches the European," a statement that I can fully endorse from my material. Within our area the species grows 6-10 cm. high, flowers abundantly, and generally seems to ripen fruit in plenty; at Churchill, a little to the south, it not infrequently exceeds 30 cm. in height.

General Distribution. ? Nearly circumboreal, but not yet recorded from western Europe, western Asia, or the most easterly parts of North America. Chiefly subarctic. Northernmost record Shingle Point, 69° N. on the coast of Mackenzie, N.W.T. (Cox and O'Neill ex Macoun and Holm p. 21A, 1921), but probably persisting farther north elsewhere on the "Arctic Sea coast. Dr. Richardson" (cf. Hooker 1840, I, p. 319).

E. Arctic Distribution. Fairly general on the west coast of Hudson Bay as far north as Depot Island; also occurs in northernmost Quebec at Wolstenholme and Sugluk (Polunin 1936, field notes), which latter is its most easterly known extension in the New World.

Occurrence. Occasional in the extreme southwest; rare in Quebec. Grows gregariously among Puccinellias, etc., in muddy "saltmarsh" areas, chiefly on the shores of sheltered lagoons, but sometimes above high-water mark on the exposed coast.

8. N. QUEBEC: r. Sugluk, Polunin 1936; Wolstenholme, Polunin 1934 and 6.

10. W. COAST HUDSON BAY: o. Depot Island, Comer 1893 (G); Chesterfield, Malte 1928 (O,G,C), Polunin 1936; Rankin Inlet, Macoun 1910 (O).

286. *Chrysanthemum integrifolium* Richardson in Franklin, Narr. 1st Jour., App., p. 749 (1823).

This delightful little plant varies somewhat in the degree of hairiness of the upper part of the axis. However, this seems to be largely a function of age, most individuals being here conspicuously white-lanate when young, but much less noticeably so when mature. In our area the axis is generally around 10 cm. high, but may sometimes remain dwarfed at 1-2 cm.

General Distribution. North America, transgressing into eastern Asia. Chiefly low-arctic and subarctic, but apparently not reaching Greenland. Northernmost record Cape Sparbo, 75° 52' N. on the north coast of Devon Island (R. M. Anderson 1928—specimen in Herb. Ottawa).

E. Arctic Distribution. Fairly general in the insular regions of the south and widespread to northern Baffin, Somerset, and Devon Islands. Apparently absent from the mainland regions of the extreme south and also from Ellesmere.

Occurrence. Only occasional in most places, and never at all abundant. Grows chiefly in moist, peaty depressions in areas of exposed tundra, often where it is liable to be inundated in early summer but completely dessicated later on. Seems to be somewhat calcicolous. Flowers and fruits abundantly.

2. DEVON, ETC., ISLANDS: o. *Devon Island*, Cape Sparbo, Anderson 1928 (O). *Somerset Island*, Parry 1825 (K,B,L); Port Kennedy, Walker 1858 (K).

3. N. BAFFIN: 1. Pond Inlet and near, Lavoie 1910 (O), and six others (O,M,C); Arctic Bay, Polunin 1936.

4. C. BAFFIN: r. Nettilling Lake, Soper 1925 (O).
5. S. BAFFIN: o. Lake Harbour, Polunin 1936; Amadjuak, Bell 1897 (O); Bowdoin Harbour, Soper 1925 (O); Cape Dorset, Robinson 1922 (G), Polunin 1934.
6. MELVILLE PENINSULA: o. Five Hawser Bay, Parry (B); Winter Island, Parry (B*); Repulse Bay, Hooper 1821 (L), Parry (B), Olsen 1922 (C). *Vansittart Island*, Bangsted 1923 (O,C); Danish Island, Freuchen 1922 (C).
9. ISLANDS IN HUDSON, ETC., BAYS: f. Akpatok Island, Polunin 1931 (B); Nottingham Island, Bell 1884 (O,G,B), Mackenzie 1886 (O), Johansen 1927 (C). *Southampton Island*, (?Lyon ex Hooker 1825b, p. 191); York Bay, Hooper 1821 (L, note only), Parry 1821 (B,C), Mathiassen 1922 (C); South Bay, Malte 1928 (O,G,C), Sutton 1930 (G), Polunin 1934 and 6; Coats Island, Porsild 1930 (O*).

287. *Tanacetum huronense* Nutt., Gen. N. Am. Pl. II, p. 141 (1818).

This was first discovered within our area by the Canadian geologist A. P. Low, who collected it in 1898 on the east coast of Hudson Bay, at River Kovik, which is the most northerly station known for the species. Low's specimens are only about 7 cm. high, copiously lanate, and strictly monocephalous, so being referable to the dwarfed

var. *terrae-novae* Fernald in *Rhodora* XXV, p. 14 (1923).

This form is also strongly approached by much of the recently collected material (See below) from Cape Smith, a little farther south but still within our area, even if it has been cited by Fernald as belonging to another of his varieties—which latter is, to be sure, attained in other specimens growing in sheltered places at Cape Smith, and by almost all at Port Harrison, viz.,

var. *bifarium* Fernald in *Rhodora* XXXVII, p. 334 (1935).

The whole species in our area varies from less than 10 to about 25 cm. in height, but appears always to flower and fruit plentifully.

General Distribution. North America; the entire species from northern Quebec and Lake Athabaska southwards to Newfoundland, Maine, and Lake Michigan. Northernmost record River Kovik, 61° 38' N. on the east coast of Hudson Bay (A. P. Low 1898—specimen in Herb. Ottawa, sub nom. *Pyrethrum bipinnatum*).

E. Arctic Distribution. Known only from two stations in northern Quebec, just within our area on the east coast of Hudson Bay.

Occurrence. Rare and restricted. Grows at Cape Smith (and a little south of our area at Port Harrison) chiefly among grasses and other herbs on rather dry, sandy areas—near the sea but probably out of the direct influence of salt water or spray. Sometimes quite common locally.

8. N. QUEBEC: r. River Kovik, Low 1898 (O) 23015 var. *terrae-novae*; Cape Smith, Malte 1928 (O,G) var. *bifarium* apprg. var. *terrae-novae* incl. 120844 120922 as "var. *bifarium*" scr. Fernald, Polunin 1936 var. *bifarium* and 1331 1348 1367 apprg. var. *terrae-novae*.

288. *Artemisia borealis* Pall., Reise III, App., p. 755 (1776).

This, like many other members of the genus, is a bad *typus polymorphus*. The Gray Herbarium material of it being out on loan, and the problem having been already attacked by other and better qualified authors

with only doubtful success, I will content myself with mentioning that the variations within our area are chiefly in the colour of the involucre and in the quality and abundance of the pubescence. Most of the material has the involucre glabrous or essentially so, but some from the shores of Hudson Strait has then densely villous and the foliage grey-sericeous. Such plants are referable to

var. **Purshii** Besser ex Hook., Fl. Bor.-Am. I, p. 326 (1834) excl. syn.

(*A. campestris spithamea* Hall and Clements, not *A. spithamea* Pursh.)

For an account of the confused synonymy, etc., of this form See Fernald (1927, pp. 93-5), who has also given a map (1925, p. 339) of the world distribution of the species. To this a number of minor additions must now be made, particularly around the Hudson Bay and Strait region within our area (See below), and also to the west (cf. Raup 1936b, p. 308).

General Distribution. Nearly circumpolar, but apparently absent from western Europe and East Greenland. Arctic, subarctic, and alpine. Northernmost record Admiralty Peninsula, c. 75° N. in Novaya Zemlya (Lynge 1923, p. 80).

E. Arctic Distribution. Widespread from Keewatin and northern Quebec through southern Baffin to Cumberland Gulf.

Occurrence. Local and only occasional—and apparently absent from some considerable areas even within its limited range. Grows gregariously on dry sand or gravel banks and ridges, often in very exposed situations and sometimes where the surface is unbound by any other species. May be anywhere between 4 and 25 cm. high, flowering abundantly and setting ripe fruit.

4. C. BAFFIN: r. *Cumberland Gulf*, Kingnait, Taylor 1860 (K,B)¹.

5. S. BAFFIN: o. *Frobisher Bay*, north of York Harbour, Potter 1937. *South Coast*, Bell 1897 (O); Lake Harbour, Malte 1927 (O,C), Polunin 1936 incl. 1221 1235 1238 1239 1250 var. *Purshii*; Upper Savage Island, Parry 1821 (B) "The only specimen I have" scr. Parry.

8. N. QUEBEC: r. Sugluk, Polunin 1936 var. *Purshii*; River Kovik, Low 1898 (O).

10. W. COAST HUDSON BAY: l. Chesterfield, Freuchen 1923 (O,C), Malte 1928 (O,C), Polunin 1936.

289. **Petasites sagittatus** (Pursh) A. Gray, Bot. Calif. I, p. 407 (1876).

Nardosmia sagittata Hook.

This handsome species was first discovered within our area in 1931, on Akpatok Island in Ungava Bay (Polunin 1934, p. 204). It was subsequently found on Mansel Island in Hudson Bay by Mr. Douglas Leechman of the Division of Anthropology of the National Museum of Canada (cf. Polunin 1938, p. 6). The specimens are typical except for their rather short and broad leaves and somewhat congested inflorescences; these latter grow generally about 30 cm. high and produce abundant flowers

¹ There is another specimen in Herb. Edinburgh.

—and, I think, ripe fruits. The distribution is stated by Rydberg (1927, p. 312) to be "Labrador to South Dakota, Colorado, British Columbia, and Alaska," but this hardly gives a fair idea of its extensive northern range.

General Distribution. North America, stretching from Labrador and the southernmost parts of the Arctic Archipelago westwards to Mackenzie and Alaska and southwards to South Dakota and Colorado. Northernmost record Fort Franklin, c. 66° N. in the District of Mackenzie, N. W. T. (Richardson ex Hooker 1840, I, p. 307).

E. Arctic Distribution. Known only from Akpatok and Mansel Islands in the extreme south.

Occurrence. Very rare. Found only twice, growing gregariously in closed areas of *Carex* or *Eriophorum* marsh surrounding freshwater pools in relatively sheltered situations in calcareous regions (cf. Polunin 1934b, p. 381).

9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B); Mansel Island, Leechman 1936.

290. *Arnica alpina* s.l. ((L.) Olin, Diss. Arnica, p. 11 (1799)).

The material that I am including under this name is admittedly heterogeneous, but it belongs to a single continuous series representing one polymorphous coenospecies—from which it is, at least in our area, impossible to uphold any other entity as specifically distinct. To be sure, some of the material from within our area has been referred to other species—particularly to *A. terrae-novae* Fernald (cf. 1933, pp. 365-6)—but Prof. Fernald now agrees that this and the usual arctic American form of *A. alpina* are one and the same. This arctic American plant, although very variable in a number of characters (such as the hairiness of the leaves—cf. Malte 1934, p. 193), differs from the European plant in the shorter teeth of the ligules and hence the less untidy appearance of the whole capitulum; also the involucre bracts are generally darker and frayed or forked at the tip. All my material from the Arctic Archipelago belongs to this form, and is to be called

var. *angustifolia* (Vahl) Fernald in *Rhodora* XXXVI, p. 96 (1934).

However, specimens from the south shore of Hudson Strait, from Wolstenholme, Wakeham Bay, and some other subarctic stations, generally have the bracts of the involucre broader and the leaves on the whole narrower, and the stems much less hairy below. Any of these features can be seen in material from northwest Greenland, and the plants being, moreover, variable in other characters, it seems safest to refer them without qualification to the species—indeed I was so advised by Prof. Fernald himself, after he had kindly looked through my material. In Hudson Bay still farther south, most notably just outside our area at Port Harrison and Churchill, where the plants are relatively luxuriant and generally pleiocephalous, the involucre bracts are still broader (more or

less obovate), the leaves no longer ovate but linear-lanceolate and long-attenuate, and the stems are essentially glabrous below. These plants come nearer to *A. plantaginea* Pursh, as some have been named, but as they do not quite conform to the description of this given by Fernald (1905b, p. 147), and are at best the mere extreme of a varying series showing continuous gradation to *A. alpina*, I prefer to refer them all to the latter.

General Distribution. *A. alpina* s.l. circumpolar; chiefly arctic and subarctic. Northernmost record Bellot Island in Lady Franklin Bay, 81° 40' N. in Ellesmere (Capt. Feilden ex Hart (1880, p. 235) and Gen. Greely (1888, II, p. 14), both sub nom. *A. montana* and both confirmed by specimens seen).

E. Arctic Distribution. Fairly general on ice-free land almost throughout, but not yet found on the west coast of Hudson Bay or on some other considerable areas such as Southampton and Devon Islands.

Occurrence. Fairly frequent in most parts of the south and east, but rare in the Far North. Grows gregariously on sunny, grass-clad rock ledges or in other well-drained habitats—sometimes on very dry, sandy or gravelly ridges in exposed situations. Nevertheless, it appears to prefer to be covered with snow in winter, even if it shuns a prolonged covering.

1. ELLESMERE: r. *Lady Franklin Bay*, Bellot Island, Feilden—ex Hart 1880, p. 235—(K), Greely (G) 22. *South Coast*, Harbour Fiord, Simmons 1900 (G,N,K,C).
2. DEVON, ETC., ISLANDS: r. *Somerset Island*, Port Leopold, Ross 1849 (K) as "*A. montana*."
3. N. BAFFIN: r. Pond Inlet and near, Borden 1904 (O), Bazin 1935 (O,M).
4. C. BAFFIN: o. Cape Searle, Taylor 1860 (K) as "*A. montana* var. *angustifolia*"; Exeter Fiord, Taylor (K). *Cumberland Gulf*, anon. (S*), (Taylor 1863, p. 328, sub nom. *A. montana*=*angustifolia*); Pangnirtung, Soper 1924 (O), Polunin 1934, Turner 1934 (K).
5. S. BAFFIN: f. *Frobisher Bay*, Palmer 1929 (P); Point Brewster, Potter 1937; north of York Harbour, Potter 1937; York Harbour, Potter 1937. '*South Coast*,' Bell 1897 (O); Soper (Little Koukdjuak) River, Soper 1931 (O); Lake Harbour, Malte 1927 (O,G,C), Knapp 1933, Polunin 1936.

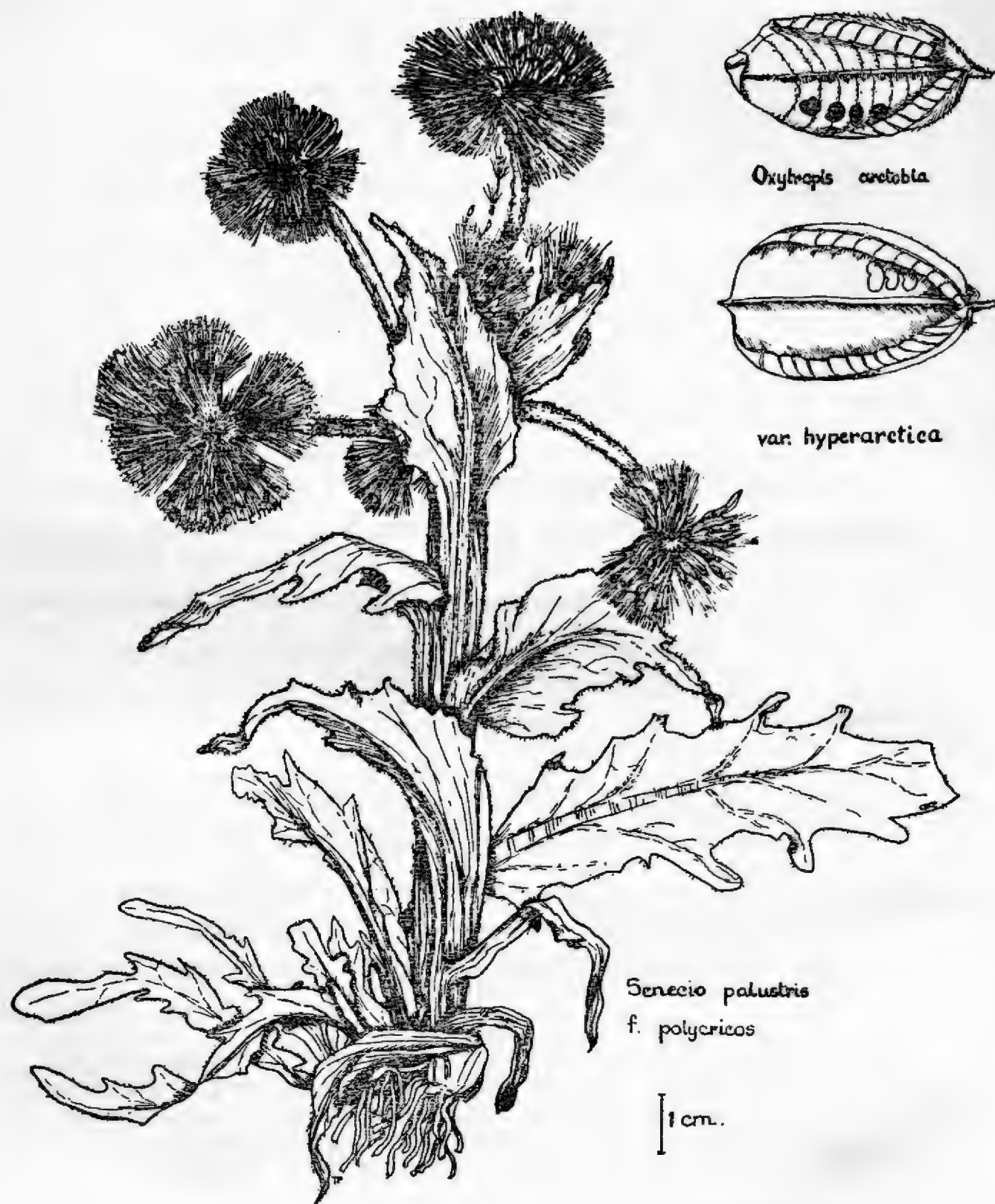
The above are all more or less typical var. *angustifolia*; many of those below belong to another form.

6. MELVILLE PENINSULA: r. "*Interior*", (Rae 1850, p. 214, sub nom. *A. montana*).
7. N. LABRADOR: r. Cape Chidley, Bell 1884 (O).
8. N. QUEBEC: c. Diana Bay, Knapp 1936; Cape Wales, Bell 1884 (O); Stupart Bay, Payne 1886 (T); King George Sound, Bell 1897 (O); Wakeham Bay, Johansen 1927 (C), Malte 1928 and 33 (O,G,N) incl. 126924 as "*A. terrae-novae*" scr. Fernald, Polunin 1936; Sugluk, Malte 1933 (O,G) 126984 as "*A. terrae-novae*" scr. Fernald, Polunin 1936; Wolstenholme, Johansen 1927 (C), Malte 1928 (O), Polunin 1934 and 6; Mosquito Bay, Low 1898 (O,G) 33019 as "*A. terrae-novae*" scr. Fernald; Cape Smith, Polunin 1936.

291. *Senecio palustris* (L.) Hook., Fl. Bor.-Am. I, p. 334 (1834).

This, the only truly arctic member of the world's greatest genus, is far from invariable even within our area, different examples showing great differences in the abundance and colour of the shaggy (generally brownish) multicellular hairs, which may largely cover the upper parts of

PLATE VIII



the plant. The specimens also vary in the shape and outline of the leaves, and in robustness, the stem being anywhere from 0.1 to 1.2 cm. in diameter and 7 to 25 cm. high in our area.

Hultén (1930, pp. 202-3) implies that all the American material belongs to var. *congestus* (R.Br.) Hook., but this is not by any means the case. All the material from Churchill and elsewhere south of our area, and one specimen collected by Thomas H. Manning on Southampton Island within it, has the open corymb that is characteristic of the typical form. However, most of the specimens from within our area have the heads agglomerated into an hemispherical cluster, and thus are referable to the usual arctic

var. *congestus* (R. Br.) Hook., Fl. Bor.-Am. I, p. 334 (1834).

A third and very striking phase was collected at Pond Inlet in 1936, in which the heads were neither separate nor aggregated into a single large cluster, but instead were agglomerated several at a time into secondary clusters, 5-10 of which, borne on narrow, spreading branches coming from near the top of the upright main axis, comprised the whole inflorescence. This seems to be a mere form, but nevertheless deserves a name of its own:

f. *polycricos* n. forma

A forma typica differt capitulis confertis in pluros corymbos in ramis gracilibus latos plerumque c. 5 cm. longis. Type in British Museum: *Nicholas Polunin*, Pond Inlet, Baffin Island, No. 2455, Sept. 4, 1936. Figure on Plate VIII.

General Distribution. The entire species "circumpolar" (but apparently absent from Greenland). Wide ranging latitudinally. Northernmost record "Mündung des Taimyr-Flusses, 75° 36' " N. in Siberia (Middendorf apud Kjellman ex Nordenskjöld 1883, p. 123).

E. Arctic Distribution. Widespread in most (but especially the western) parts of the southern half, and persisting northwards to northern Baffin and perhaps Somerset Island, but apparently absent from some considerable areas in the southeast, and not recorded north of Lancaster Sound.

Occurrence. Generally rare except very locally, but conspicuous and hence brought back many times by the early navigators and explorers. Grows gregariously, sometimes in considerable numbers, in marshy or other damp areas, generally near the seashore but also inland around the margins of freshwater tarns. Seems to be indifferent to the presence of other vegetation. Generally flowers and ripens fruit in abundance.

(DEVON, ETC., ISLANDS: ? "Somerset Island, Regents Inlet" (Parry ex Hooker 1826, p. 126).)

3. N. BAFFIN: r. Pond Inlet, Soper 1923 (O) 111691 var. *congestus*, Polunin 1936 Nos. 2455 2472 f. *polycricos*; Port Bowen, Parry 1825 (K,B) var. *congestus* orig. as "Cineraria congesta."

4. C. BAFFIN: r. Nettilling Lake, Soper 1925 (O) var. *congestus*.

5. S. BAFFIN: r. Upper Savage Island, Ross (K) var. *congestus* orig. as "Cineraria congesta."

6. MELVILLE PENINSULA: l. "Neerlo Nakto" (ex Hooker 1825, p. 397, sub nom. *Cineraria congesta*); Igloolik, Hooper 1822 (L) as "*Cineraria congesta*," Parry 1823 (B,C) as "*Cineraria congesta*," Angel 1933 (O,W) 87 (129808, 1433028) var. *congestus*; Ugli Island, Mathiassen 1922 (C) 150 var. *congestus* fide Ostenfeld.
8. N. QUEBEC: r. River Kovik, Low 1898 (O) var. *congestus* fide Greenman.
9. ISLANDS IN HUDSON, ETC., BAYS: l. *Southampton Island*, York Bay, Olsen 1922 (C) 429 var. *congestus*; South Bay, Sutton 1930 (G), Manning 1934 typical form; Walrus Island, Baird 1936 var. *congestus*.
10. W. COAST HUDSON BAY: r. Whale Point, Freuchen 1923 (C) 719 var. *congestus*; Depot Island, Freuchen 1923 (O,C) 718 var. *congestus*.

292. *Taraxacum phymatocarpum* s.l. (J. Vahl apud Hornem. in Fl. Dan. XIII, tab. mmccxcviii¹ (1860)).
T. hyparcticum Dahlst.
T. pumilum Dahlst.

Between the extreme "splitting" by the late Hugo Dahlstedt and the "lumping" of Sherff (cf. 1920) there lies a clear course which, like Gelting (1934, pp. 139 *et seq.*), I have attempted to follow in the treatment of this species, guided by the work of Baron von Handel-Mazzetti (cf. 1907) and, best of all, by Professor Fernald—in person at times, and throughout by his recent revision of "*Taraxacum* in Eastern America" (cf. 1933), which I have found admirable in almost every way.

With regard to *T. hyparcticum* and *T. pumilum*, Simmons (1906, p. 20) expressed surprise and some annoyance when Dahlstedt insisted, as I think, on separating them from material that from field observations Simmons had thought to belong all to *T. phymatocarpum*, and Fernald (1933, p. 373) says that they are "very closely allied, if not inseparable," and Mazzetti (1907, p. 59) that they are "synonyma." I have, accordingly, had little hesitation in placing them as such, for even if the *T. phymatocarpum* so constituted shows a considerable degree of variation in the shape of the leaves, it forms a characteristic entity around the plant so well illustrated in *Flora Danica*, and thus becomes the most high-arctic member of the genus, even as it is the only one in our area north of Lancaster Sound.

General Distribution. America, transgressing into eastern Asia. Chiefly high-arctic, forming a well-marked circumpolar series with the closely related *T. nivale* Lange (*T. arcticum* (Trautv.) Dahlst.)—See distribution maps given by Mazzetti (*l.c.*). Northernmost records Gunnar Andersson Valley, 82° 28' N. on the north coast of Greenland (Wulff ex Ostenfeld 1923b, p. 243), and Dumbbell Harbour, at the same latitude in Ellesmere (Capt. Feilden 1876—specimens in Kew and British Museum Herbaria).

E. Arctic Distribution. Fairly general in the northern half, and widespread to Melville Peninsula and southwest Baffin.

Occurrence. Fairly common in the Far North, becoming rarer southwards. The habitat is sometimes stated to be dry and exposed sand or gravel ridges, but I have found it only on dark humous soil in depressions

¹ Numbered "mmccclxxxviii" in the text.

that are well covered with snow in winter, or in actual late-melting patches where the surface nevertheless soon dries out. Its scapes are generally about 5, but rarely more than 10, cm. high in our area; ripe fruits are usually produced in plenty.

1. ELLESMERE: c. *Grant Land*, Dumbbell Harbour, Feilden (K,B) 1876 *fide* Mazzetti—orig. as "*T. Dens-Leonis*"; 82° 27' N., Wolf 1906 (N) as "*T. pumilum*"; Floeberg Beach, Feilden (K,B) *fide* Mazzetti and Haglund—orig. as "*T. Dens-Leonis*"; Shift Rudder Bay, Feilden (G,K,B) as "*T. Dens-Leonis* var.", "*T. officinale* var. *lividum*" *scr.* Asa Gray, "*T. phymatocarpum*" *fide* Mazzetti, and "*T. hyparcticum*" *scr.* Dahlstedt. *Lady Franklin Bay*, Greely (G) as "*T. officinale* var. *lividum*" *scr.* Asa Gray; Discovery Harbour, Hart (B,C*)¹ *fide* Mazzetti and Haglund—orig. as "*T. Dens-Leonis*." *Hayes Sound* region, several localities (cf. Simmons 1906, pp. 20-1) incl. Fram Harbour, Simmons 1899 (K,C) 1086. *South Coast*, "Fram Fiord" (Simmons 1906, p. 21, sub nom. *T. hyparcticum*); Craig Harbour, Malte 1927 (O) 119201, Feachem 1937; Harbour Fiord, Simmons 1900 (G,C) 2582; "Musk-ox Fiord" (Simmons 1906, p. 21, sub nom. *T. hyparcticum*); Goose Fiord, Simmons 1901 (N,C*) *fide* Dahlstedt, also as "*T. pumilum*" *scr.* Dahlstedt and 3645 as "*T. hyparcticum*" *scr.* Dahlstedt. "*West Coast*, Bay Fiord and Coal Bay" (Bay ex Simmons 1906, p. 21, sub nom. *T. hyparcticum*).
2. DEVON, ETC., ISLANDS: r? *Devon Island*, Cape Sparbo, Anderson 1928 (O). *Somerset Island*, Parry 1825 (K,B) as "*Leontodon palustre*".
3. N. BAFFIN: f. *Bylot Island*, Freuchen 1924 (C) 904 910; Button Point, Wilcox 1928 (O) *fide* Dahlstedt; Pond Inlet and near, Mathiassen 1923 (C) 752 ? as "*T. canadense*" *scr.* Dahlstedt, Freuchen 1924 (O?,C) 867 901 as "*T. canadense*" *scr.* Dahlstedt, Malte 1927 (O) 119203 *fide* Ostenfeld, Bazin 1935 (O,M); Arctic Bay, Malte 1927 (O) 119202, Polunin 1936.
5. S. BAFFIN: r. Bowdoin Harbour, Robinson 1922 (G) 37 *fide* Fernald—orig. as "*T. lyratum*."
6. MELVILLE PENINSULA: o. Winter Island, Parry (B) as "*Leontodon palustre*", Ross 1821 (K) *fide* Mazzetti—orig. as "*T. palustre*"; Duckett Cove, Parry 1821 (B*,C) as "*T. groenlandicum*" *scr.* Dahlstedt. *Vansittart Island*, ?Bangsted 1923 (O,C) 389 390 as "*T. canadense*" *scr.* Dahlstedt; Danish Island, Freuchen 1922 (C) 222 223 as "*T. canadense*" *scr.* Dahlstedt.

293. *Taraxacum ceratophorum* (Ledeb.) DC., Prodr. VII, p. 146 (1838).

I am still a trifle sceptical about the separability of this species within our area. It occurs in typical form at Churchill a little to the south, and has been reported on several occasions from within our area, but all the specimens of previous collectors that I have seen proved to belong to *T. lacerum*. Nor did I obtain any in 1931 or 1934; but in 1936 I found single plants at Cape Smith in Quebec and Cape Dorset in southern Baffin, which have the "much hubbled" fruits and other features of *T. ceratophorum*, even if these fruits are not quite the "right" shape and the plants have not altogether the form of typical *T. ceratophorum* from farther south. Nevertheless, I will include the species in our flora, hoping that future exploration in the southern parts of our area will substantiate my own rather doubtful records. Indeed quite recently (1937) this has to some extent been accomplished by Prof. Potter's discovery of almost typical plants in Frobisher Bay, southeast Baffin (cf. Polunin 1939, p. 42).

General Distribution. ? Circumboreal; "In tota regione arctica boreali, in Americae borealis et Asiae centralis montibus australioribus," according to Mazzetti (1907, p. 64), whose *T. ceratophorum*, although it encloses a

¹ There is another specimen in Herb. Edinburgh.

whole host of Dahlstedtian species, is stated by Fernald (1933, p. 373) to be our plant "in large part." Northernmost record unfortunately quite obscure owing to confusion with other species. I have seen no really "good" material from north of Churchill, 58° 46' N. on the west coast of Hudson Bay (Polunin 1936, field notes).

E. Arctic Distribution. Material referred to this species has been found within our area only at Cape Smith, on the east coast of Hudson Bay, and at Cape Dorset and Frobisher Bay, in southern Baffin.

Occurrence. Needs full confirmation, but at all events rare. My own collections referred to this species were growing near Hudson's Bay Company trading posts, in grassy areas much frequented by sledge-dogs and probably covered with snow in winter. The plants were 10-20 cm. high and flowering and fruiting well.

5. S. BAFFIN: r. *Frobisher Bay*, Point Brewster, Potter 1937 Nos. 8161 8163;
? Cape Dorset, Polunin 1936 No. 2351.
(N. QUEBEC ? Cape Smith, Polunin 1936, No 1351 ?)

294. ***Taraxacum lacerum* s.l.** (Greene, Pittonia IV, p. 230 (1901)).

- T. groenlandicum* Dahlstedt
T. arctogenum Dahlstedt

To the two synonyms given above might be added the following names, presented by Dahlstedt to specimens from within our area that in most cases seem to be inseparable from one another (except on purely superficial characters), and which I am, accordingly, uniting as one species: *T. pseudonorvegicum* Dahlstedt, *T. canadense* Dahlstedt, *T. umbrinum* Dahlstedt, *T. ceratodon* Dahlstedt, *T. Malteanum* Dahlstedt, and "Conf. *T. norvegicum* Dahlstedt." At least it may be said that in general appearance, leaf form, habitat, shape and appendagement of the involucre bracts, achene shape and surface, and other characters that one would expect to be among the most conservative (it will be noted that I am ignoring the exact outline of the leaf, the colour of the achenes, and the development of pollen), the plants all fall together, with only a reasonable degree of variation, as *one major series*.

Except in the Far North where its place is taken by *T. phymatocarpum*, *T. lacerum* is by far the commonest member of the genus over most of our area. It grows generally more than 5, and less than 20, cm. high, but sometimes in exposed places its leaves may remain prostrate and its scapes fail to reach the former height, whereas in the most favourable situations—especially around habitations—the scapes reach 30 cm.

General Distribution. North America. According to Fernald (1933, p. 378) "Greenland and Arctic America, south to Labrador, northwestern Newfoundland and the Mingan Islands, Quebec, and in the West to the Rocky Mts. in the upper Peace River region." Northernmost record doubtful owing to confusion with other species, but certainly occurring as far north as Pond Inlet, 72° 43' N. in Baffin (J. D. Soper 1923, specimen in Copenhagen Herbarium; Inspector A. H. Joy 1924, specimen in Herb. Ottawa; also Polunin 1936, field notes).

E. Arctic Distribution. Probably complete in the extreme south and fairly general to northern Baffin, but not known north of Lancaster Sound.

Occurrence. Plentiful in the mainland regions of the extreme south and in the southernmost parts of the Arctic Archipelago, but getting rarer northwards. Markedly gregarious, growing chiefly around habitations and in other manured areas, where it is sometimes quite luxuriant. Thrives best where there is also a good deep covering of snow in winter. Also occurs in undisturbed herbaceous vegetation, chiefly on dry, grassy slopes that face south and are situated towards the outside of snow-patches. Flowers and fruits abundantly.

3. N. BAFFIN: r. Pond Inlet and near, Soper 1923 (C) 111693 as "*T. groenlandicum*" *scr.* Dahlstedt, Joy 1924 (O) as "*T. canadense*" *scr.* Dahlstedt, Polunin 1936.
4. C. BAFFIN: o. Cape Searle, Taylor 1860 (K) as "*Leontodon Taraxacum*." *Cumberland Gulf*, (Taylor 1863, p. 329, sub nom. *T. palustre*), Kumlien (G) *fide* Fernald—orig. as "*T. officinale* var. *lividum*"; Blacklead Island, Soper 1924 (O) 121104 121105 as "*T. canadense*" *scr.* Dahlstedt; Nettilling Fiord, Soper 1925 (O) 121106 as "*T. canadense*" *scr.* Dahlstedt.
5. S. BAFFIN: f. Loks Land, Palmer 1929 (P, *pars*) 642391 642392 as "*T. ceratophorum*." *Frobisher Bay*, Sewall 1927 (K) 304 as "*T. lapponicum*"; Point Brewster, Potter 1937; York Harbour, Potter 1937. '*South Coast*', Bell 1897 (O) 18756 as "*T. officinale* var. *alpinum*"; Lake Harbour, Johansen 1927 (C) 1136 as "*T. russeolum*" *scr.* Dahlstedt, Malte 1927 and 8 (O) 119209 as "*T. russeolum*" *scr.* Dahlstedt and 120293 as "*T. Malteanum*" *scr.* Dahlstedt, Knapp 1933, Polunin 1934 and 6; Amadjuak Bay, Soper 1926 (O) 121101 as "*T. canadense*" *scr.* Dahlstedt; Cape Dorset and near, Soper 1926 (O) 121102 as "*T. pseudonorvegicum*" *scr.* Dahlstedt and 121103 as "*T. canadense*" *scr.* Dahlstedt, Polunin 1934 and 6.
6. MELVILLE PENINSULA¹: o. Island between Cape McLaren and Cape Martineau, Angel 1933 (W) 67 (1433008); Repulse Bay, Hooper 1821 (L) as "*Leontodon Taraxacum*". *Vansittart Island*, Danish Island, Freuchen 1922 (K,C) 221 as "*T. canadense*" *scr.* Dahlstedt.
7. N. LABRADOR: f. ? *Chidley Peninsula*, MacGregor 1905 (K) as "*T. ceratophorum*"; Burwell, Johansen 1927 (C), Malte 1927 and 33 (O,G) *fide* Fernald—119210 119211 as "*T. umbrinum*" *scr.* Dahlstedt and 119205 as "*T. ceratodon*" *scr.* Dahlstedt, Polunin 1934 and 6; Bowdoin Harbour, Potter and Brierly 1934 (G) 3774 as "*T. lapponicum*"; Grenfell Tickle, Potter and Brierly 1934 (G, *pars* with *T. lapponicum*) 3775.
8. N. QUEBEC: c. Diana Bay, Ney and Courtright 1936, Knapp 1936; Payne Bay, Ney and Courtright 1936; Cape Wales, Bell 1884 (O) 15132 as "*T. officinale* var. *lividum*", "*T. ceratophorum*. The form described (as to foliage and bracts) by Greene for his *T. mutilum*. *T. lacerum* also belongs here" *scr.* Sherff; Stupart Bay, Payne 1886 (T) 66 as "*Leontodon Taraxacum* var. *palustre*"; King George Sound, Bell 1897 (O) 118313 as "*T. officinale* var. *alpinum*"; Wakeham Bay, Johansen 1927 (C) 1205 as "*T. russeolum*" *scr.* Dahlstedt, Malte 1927 (O) 119206 as "*T. umbrinum*" *scr.* Dahlstedt and "*Conf. T. norvegicum*" *scr.* Dahlstedt, Polunin 1936; Sugluk, Malte 1933 (O,G) *fide* Fernald, Polunin 1936; Wolstenholme, ? Low 1898 (O) 23016 as "*T. officinale* var. *alpinum*" and then "*T. ceratophorum*" *scr.* Holm, and then "? cf. *lyratum*" *scr.* Sherff, Johansen 1927 (C), Polunin 1934 and 6; Digges Island, Bell 1884 (O) 62180 as "*T. pseudonorvegicum*" *scr.* Dahlstedt; Cape Smith, Polunin 1936.

¹ Recently I saw in Herb. Edinburgh another specimen that probably belongs here, even if the leaves are almost entire and unusually long and broad. It was collected by Parry at Duckett Cove and originally named "*Leontodon palustre*".

9. ISLANDS IN HUDSON, ETC., BAYS: o. Akpatok Island, Polunin 1931 (B) 224 225 1010 1061 13? 948? 968? as "*Taraxacum* sp." Southampton Island, White Island, Angel 1933 (W) 44 (1432985)? 56 (1432997); ? York Bay, Hooper 1821 (L, note only); South Bay, Sutton 1930 (G) *vide* Fernald.
10. W. COAST HUDSON BAY: l. Chesterfield, Tyrrell (O) 62184 as "*T. officinale* var. *alpinum*" and "*T. ceratophorum*" *scr.* Sherff, Freuchen 1923 (C) 728 as "*T. canadense*" *scr.* Dahlstedt, Malte 1928 (O) 120448 120449 as "*T. pseudo-norvegicum*" *scr.* Dahlstedt, Polunin 1936.

295. ***Taraxacum lapponicum*** Kihlman in Medd. Soc. Faun. Fl. Fenn. XI, p. 108 (1885).

T. croceum Dahlstedt

T. acidolepis Dahlstedt

I have been shown a letter in Dahlstedt's own hand dated "Stockholm Nov. 14 1927" in which he writes admitting his *T. croceum* to be a mere synonym of Kihlman's earlier described species: "It has been very interesting to find that *T. lapponicum* (*T. croceum* Dt.) is distributed also in the Arctic North America." Nevertheless he persisted until his death to use his own name for the species. This is immediately told from all others occurring in our area by the extraordinarily broad basal parts of the leaf, whose lamina persists sometimes with scarcely any contraction right to its point of attachment to the stem. It is also told from *T. lacerum* by the lighter colour of the fresh petals and the greater breadth of the whitish, scarious margins to the involucral bracts. In our area *T. lapponicum* remains rather small, rarely exceeding 10 cm. in height, but nevertheless flowering abundantly and ripening fruit successfully.

General Distribution. ? Circumboreal. According to Fernald (1933, p. 384) "Arctic and subarctic Eurasia and North America, south with us to Newfoundland and eastern Quebec." Northernmost record Quqertarssuak, Nûgâtsiaq, 71° 33' N. in West Greenland (M. P. and R. T. Porsild 1929—specimen in Gray Herbarium).

E. Arctic Distribution. Apparently limited to the eastern parts of the extreme south, being known with certainty only from northernmost Labrador, Akpatok Island in Ungava Bay, and two stations in southern Baffin, but possibly ranging northwards to 67° 20' N. on the east coast of this huge island.

Occurrence. Fairly common around Port Burwell, rare in Baffin and elsewhere. Grows gregariously in grassy places in late-snow areas, or on slopes or ledges that are at least well covered with snow in winter, and remain damp for several weeks after it melts.

(C. BAFFIN: ? "Cape Searle" (Taylor ex Simmons 1913, p. 131, sub nom. *T. croceum*).)

5. S. BAFFIN: r. Loks Land, Palmer 1929 (P) 642392 as "*T. ceratophorum*." South Coast, Lake Harbour, Polunin 1936 No. 2296.

7. N. LABRADOR: c. *Chidley Peninsula*, MacGregor 1905 (K); Cape Chidley, Bell 1884 (O) 62181 as "*T. officinale* var. *alpinum*" and "*T. croceum*" scr. Dahlstedt; Burwell, Borden 1904 (O) 63001 as "*T. ceratophorum*," Soper 1926 (O) 121106 as "*T. brachyceras*" scr. Ostenfeld, Malte 1928 (O) 120162 as "*T. brachyceras*" scr. Ostenfeld and "*T. acidolepis*" scr. Dahlstedt, Polunin 1931, 4, and 6; Grenfell Tickle, Potter and Brierly 1934 (G, *pars* with *T. lacerum*) 3775.
9. ISLANDS IN HUDSON, ETC., BAYS: r. Akpatok Island, Polunin 1931 (B) 212 as "*Taraxacum* sp."

296. *Taraxacum torngatense* Fernald in *Rhodora* XXXV, p. 385 (1933).

Even if this species was "proposed with some hesitation" it seems to be fully substantiated by the material obtained in 1936 from around Port Burwell, not far to the north of the type locality. Not only do its "almost to quite smooth achenes and the very long pyramid. . . set it off very definitely from its allies," but already without looking at the fruits I was able to sort on their general appearance the specimens of it from my great bulk of *T. lacerum* and *T. lapponicum*. With the "good" specimens from around Port Burwell were sorted some very doubtful ones (Nos. 1222 1234) from Lake Harbour in southern Baffin, which in the absence of fruits for confirmation I will merely mention here with a ? and not include in the distribution and records given below. *Taraxacum torngatense* in our area grows generally erect, but less than 10 cm. high; it flowers well enough, but fruits only sparingly.

General Distribution. Eastern North America; known with certainty only from the most northerly parts of Labrador, on or near the Atlantic coast. Northernmost record Port Burwell, 60° 25' N. in Labrador (Polunin 1936, field notes).

E. Arctic Distribution. Known with certainty only from the mainland regions of the extreme north of Labrador, in the southeast corner.

Occurrence. Perhaps not uncommon in its limited area. Found growing with grasses in depressions among rocks, chiefly in sheltered situations that are deeply covered over with snow in winter.

7. N. LABRADOR: f? Burwell, Polunin 1936 Nos. 1072 1090 2636 2638 1083? 1104? 1114 ?; ?Bowdoin Harbour, Potter 1937 No. 8158; Lady Job Harbour, Potter 1937 No. 8159; Grenfell Tickle, Potter and Brierly 1934 (G) 3767 *fide* Fernald.

297. *Crepis nana* Richardson in Franklin, Narr. 1st. Jour., App., p. 746 (1823).

C. pygmaea (Ledeb.) Simmons

Youngia pygmaea Ledeb.

Barkhausia nana (Richardson) DC.

I have never observed in nature this plant, although it has been collected by others at least seven times within our area. Such specimens as I have seen in herbaria consist of small rosettes about 5 cm. in diameter, covered with flowering or fruiting capitula, but apparently rising scarcely at all above the surface of the soil.

General Distribution. Widespread in arctic, subarctic, and alpine regions of Asia and also of America, where it occurs from the Arctic Archipelago, Labrador, and Newfoundland to the Rocky Mountains and Alaska. Northernmost record Strathcona Sound, c. 73° 15' N. in Admiralty Inlet (J. D. Soper 1923—specimen in National Herbarium of Canada at Ottawa).

E. Arctic Distribution. Known only from the northern half of Baffin and the south coast of Melville Peninsula and its adjacent islands.

Occurrence. Apparently rare and restricted. Said to grow in dry, calcareous areas.

3. N. BAFFIN: r. *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O) 111692.
4. C. BAFFIN: r. Clyde, Knapp 1934.
6. MELVILLE PENINSULA: o. Five Hawser Bay, Parry 1821 (C); "Repulse Bay" (Parry ex Hooker 1825, p. 397). *Vansittart Island*, Mathiassen 1921 (C); Danish Island, Freuchen 1922 (O,K,C).
9. ISLANDS IN HUDSON, ETC., BAYS: r. *Southampton Island*, White Island, Angel 1933 (W).

CONCLUSION

In the preceding pages I have given some account of the taxonomy and systematic position, the morphological variation, and significant features of the distribution and ecology, of each of the 399 species and delimitable varieties and *formae* of vascular plants that have so far been found growing north of the 60th parallel of latitude in eastern Canada. It is impossible to say how many more will be revealed by future exploration, or will be introduced as a result of man's ever-increasing mobility and exploitation. At the present moment—remarkably enough even if we bear in mind the severity of the climate—it seems doubtful whether a single one has been so introduced, in marked contrast to the situation slightly to the south of our "Eastern Arctic" area.¹

SUMMARY OF SPECIES

By way of summary and for the convenience of phytogeographers, I will now give a tabulated list of all the species of vascular plants dealt with in the present treatise as occurring in the Canadian Eastern Arctic proper—i.e., north of the 60th parallel. For purposes of range citation the

¹ The flora and vegetation of these "Subarctic Regions" lying south of the 60th parallel in eastern Canada will be dealt with in Part IV of the present series, where also there will be found some indication as to which further plants are most likely to be found with proper search north of the 60th parallel in the future. The Vegetation and Ecology of this vast region lying north of the 60th parallel will be described in Part III, following consideration of the Thallophyta and Bryophyta in Part II.

area has been divided into ten major districts. A mark "1" or blank space denotes, respectively, occurrence in or absence from each of these districts, which are numbered and delimited as in the main body of the work, viz.,

1. Ellesmere.
2. Devon, Cornwallis, and Somerset Islands.
3. Northern Baffin.
4. Central Baffin.
5. Southern Baffin.
6. Melville Peninsula and adjacent islands.
7. Northernmost Labrador.
8. Northern Quebec.
9. Islands in Hudson and Ungava Bays.
10. West coast of Hudson Bay (Keewatin).

Those varieties and *formae* that have been "taken up" as definitely separable within the Eastern Arctic area are listed after the species to which they belong—but without separate distribution citations, as such details are to be obtained from the general text.

	1	2	3	4	5	6	7	8	9	10
1. <i>Woodsia ilvensis</i> (L.) R. Br.....				?	1		1			
2. <i>W. alpina</i> (Bolton) S. F. Gray....	1			1					1	
3. <i>W. glabella</i> R. Br.....	1	1	1	1	1	1		1		
4. <i>Cystopteris fragilis</i> (L.) Bernh....	1		1	1	1		1	1	1	
5. <i>Dryopteris Phegopteris</i> (L.) C. Chr.							1			
6. <i>D. fragrans</i> (L.) Schott.....	1		1	1	1	1	1	1	1	1
7. <i>Equisetum arvense</i> L.....	1	1	1	1	1	1	1	1	1	1
8. <i>E. variegatum</i> Schleich.....	1		1	1	1	1	1	1	1	
9. <i>E. scirpoides</i> Michx.....					1		1		1	
10. <i>Lycopodium Selago</i> L.....	1	1	1	1	1	1	1	1	1	1
11. <i>L. annotinum</i> L. var. <i>alpestre</i> Hartm.....				1	1					1
12. <i>Zostera marina</i> L.....										1
13. <i>Potamogeton filiformis</i> Pers. and var. <i>borealis</i> (Raf.) St. John....								1		1
14. <i>Hierochloa odorata</i> (L.) Wahlenb..							1			
15. <i>H. alpina</i> (Sw.) R. and S. and f. <i>Soperi</i> Polunin.....	1	1	1	1	1	1	1	1	1	1
16. <i>H. pauciflora</i> R. Br.....		1	1	?	1	1		1	1	1
17. <i>Alopecurus alpinus</i> Sm.....	1	1	1	1	1	1	1	1	1	1
18. <i>Arctagrostis latifolia</i> (R. Br.) Griseb. and f. <i>aristata</i> Holmb. and var. <i>longiglumis</i> Polunin...	1	1	1	1	1	1	1	1	1	1
19. <i>Agrostis borealis</i> Hartm.....				1	1		1	1		1
20. <i>Calamagrostis deschampsoides</i> Trin.....										1
21. <i>C. purpurascens</i> R. Br. and var. <i>Maltei</i> Polunin.....			1							
22. <i>C. canadensis</i> (Michx.) Nutt. var. <i>scabra</i> (Presl) Hitchc.....					1		1	1		
23. <i>C. neglecta</i> (Ehrh.) Gaertn. et al. var. <i>borealis</i> (Laestad.) Kearney		1		1			1	1	1	1
24. <i>Deschampsia brevifolia</i> R. Br.....	1	1	1			1			1	
25. <i>D. alpina</i> (L.) R. and S.....					1		1			
26. <i>D. pumila</i> (Ledeb.) Ostenfeld....	1	1		1	1			1		1
27. <i>D. flexuosa</i> (L.) Trin. var. <i>montana</i> (L.) Gremli.....							1			
28. <i>D. caespitosa</i> (L.) P. de Beauv. var. <i>littoralis</i> (Reut.) Richter (agg.).....	1			1	1		1	1	1	1
29. <i>Vahlodea atropurpurea</i> (Wahlenb.) Fries.....		?						1		
30. <i>Trisetum spicatum</i> (L.) Richt. and var. <i>Maidenii</i> (Gandoger) Fer- nald and var. <i>molle</i> (Michx.) Beal	1	1	1	1	1	1	1	1	1	1
31. <i>Catabrosa algida</i> (Soland.) Fries and f. <i>vestita</i> (Holmb.) Polunin	1	1	1	1	1		1	1	1	
32. <i>Pleuropogon Sabinei</i> R. Br.....	1	1	1	1	1	1	?	1	1	
33. <i>Poa abbreviata</i> R. Br.....	1	1	1			1				
34. <i>P. Nascopieana</i> Polunin.....				1						
35. <i>P. laxa</i> (s.l.) Haenke.....								1		
36. <i>P. glauca</i> M. Vahl and var. <i>tenuior</i> Simmons.....	1	1	1	1	1	1	1	1	1	1
37. <i>P. Hartzii</i> Gandoger emend. Soeren- sen and var. <i>vivipara</i> Polunin..	1	?								
38. <i>P. arctica</i> R. Br. and var. <i>vivipara</i> Hook.....	1	1	1	1	1	1	1	1	1	1
39. <i>P. pratensis</i> (s.l.) L. and f. <i>prolifera</i> Simmons.....	1	?	1	1	1		1	1	1	1

	1	2	3	4	5	6	7	8	9	10
40. <i>P. alpina</i> L. and f. <i>brevifolia</i> (Gaudin) Polunin.....			?	1	1	?	1	1	1	....
41. <i>P. labradorica</i> Steud.....							1			....
42. <i>Colpodium fulvum</i> (Trin.) Griseb. and f. <i>aristatum</i> Polunin and var. <i>effusum</i> (Lange) Polunin and var. <i>effusum</i> f. <i>depauperatum</i> (Nathorst) Polunin.....				1	1	....		1	1	1
43. <i>Dupontia Fisheri</i> R. Br. and f. <i>psilosantha</i> (Rupr.) Polunin and f. <i>micrantha</i> (Holm) Polunin and var. <i>aristata</i> Malte.....	1	1	1	1	1	1	1	1	1	1
44. <i>Puccinellia phryganodes</i> (Trin.) Scribn. and Merrill.....	1	1	1	1	1	....	1	1	1	1
45. <i>P. paupercula</i> (Holm) Fernald and Weatherby.....		1	1	1	1	?	1	1	1	1
46. <i>P. angustata</i> (R. Br.) Rand and Redfield (agg.).....	1	1	1	1	1	1	1	1	1	1
47. <i>P. Vahlana</i> (Liebm.) Scribn. and Merrill.....	1	1	1	....	1	....	1	....	1	....
48. <i>Festuca rubra</i> L. and var. <i>arenaria</i> (Osborn) E. Fries and var. <i>mutica</i> Hartm.....							1	1	1	....
49. <i>F. vivipara</i> (L.) Sm. var. <i>hirsuta</i> (Lange) Scholander.....								1	....	....
50. <i>F. brachyphylla</i> Schultes and f. <i>flavida</i> Polunin.....	1	1	1	1	1	1	1	1	1	1
51. <i>F. baffinensis</i> Polunin.....	1	....	1	....	1	....	....	....	....	....
52. <i>Agropyron violaceum</i> (Hornem.) Lange var. <i>hyperarcticum</i> Polunin.....	1	....	1	....	....	....	....	?	....	....
53. <i>Elymus arenarius</i> L. var. <i>villosus</i> E. Meyer and var. <i>villosissimus</i> (Scribn.) Polunin.....			1	1	1	1	1	1	1	1
54. <i>Eriophorum Scheuchzeri</i> Hoppe....	1	1	1	1	1	1	1	1	1	1
55. <i>E. Chamissonis</i> C. A. Meyer f. <i>albidum</i> (F. Nyl.) Fernald....			1	?	1	....	....	....	?	1
56. <i>E. spissum</i> Fernald.....			1	1	1	1	1	1	....	1
57. <i>E. callitrix</i> Cham.....			1	1	1	....	1	1	1	1
58. <i>E. angustifolium</i> Roth and var. <i>alpinum</i> Gaudin and var. <i>triste</i> Th. Fries.....	1	1	1	1	1	1	1	1	1	1
59. <i>Scirpus caespitosus</i> L. var. <i>callosus</i> Bigel.....					1	....	....	1	....	....
60. <i>Eleocharis acicularis</i> (L.) R. and S. and f. <i>submersa</i> (Hj. Nilss.) Norman.....					1	....	....	1	....	1
61. <i>Kobresia Bellardi</i> (All.) Degland..	1	1	1	1	1	....	1	1	1	....
62. <i>K. simpliciuscula</i> (Wahlenb.) Mackenzie.....	1	1	1	....	1	....	1	1	1	1
63. <i>Carex nardina</i> E. Fries and var. <i>Hepburnii</i> (Boott) Kuekenenthal.	1	1	1	1	1	1	1	1	1	1
64. <i>C. capitata</i> L.....					1	....	....	....	....	....
65. <i>C. maritima</i> (s.l.) Gunn. and f. <i>inflata</i> (Simmons) Polunin and var. <i>setina</i> (Christ) Fernald....	1	1	1	....	1	....	....	1	1	1
66. <i>C. gynocrates</i> Wormskj.....					1	?	1	....	....	....
67. <i>C. chordorrhiza</i> Ehrh.....					1	....	....	1	1	1
68. <i>C. ursina</i> Dewey.....	1	1	1	1	1	....	....	1	1	1

[illegible]

	1	2	3	4	5	6	7	8	9	10
112. <i>S. fullertonensis</i> Schneider.....								1	?	1
113. <i>S. glauca</i> (s.l.) L. and var. <i>stenolepis</i> (Floderus) Polunin.....				1	1		?	1	1	1
114. <i>S. cordifolia</i> Pursh and var. <i>calli- carpaea</i> (Trautv.) Fernald and f. <i>tonsa</i> (Fernald) Polunin and var. <i>Macounii</i> (Rydberg) Schneider.....				1	1		1	1	?	....
115. <i>S. Richardsoni</i> Hook. var. <i>McKeandii</i> Polunin.....			1	1	?	1	?	?	1	1
116. <i>S. calcicola</i> Fernald and Wiegand and var. <i>Nicholsiana</i> Polunin.....				1	1		1	1	1	1
117. <i>S. alaxensis</i> (Anderss.) Coville.....						1			1	1
118. <i>S. planifolia</i> Pursh (agg.).....					1				?	1
119. <i>Betula glandulosa</i> Michx. var. <i>sibirica</i> (Ledeb.) S. F. Blake..				1	1		1	1	1	1
120. <i>B. nana</i> L.....				1						....
121. <i>Koenigia islandica</i> L.....		1	1	1	1		1	1	1	1
122. <i>Oxyria digyna</i> (L.) Hill.....	1	1	1	1	1	1	1	1	1	1
123. <i>Polygonum viviparum</i> L. and f. <i>alpinum</i> (Wahlenb.) Polunin..	1	1	1	1	1	1	1	1	1	1
124. <i>Montia lamprosperma</i> Cham.....				1	1		1	1	?	1
125. <i>Silene acaulis</i> (L.) L. var. <i>exscapa</i> (All.) DC.....	1	1	1	1	1	1	1	1	1	1
126. <i>Lychnis furcata</i> (Raf.) Fernald...	1	1	1	1	1	1	1	1	1	....
127. <i>L. triflora</i> R. Br.....				1						....
128. <i>L. affinis</i> Fries.....									?	1
129. <i>L. apetala</i> L.....	1	1	1	1	1	1	1	1	1	1
130. <i>L. alpina</i> L.....							1			....
131. <i>Cerastium alpinum</i> (s.l.) L.....	1	1	1	1	1	1	1	1	1	1
132. <i>C. Beeringianum</i> Cham. and Schl.			?	?	?					1
133. <i>C. Regelii</i> Ostenfeld.....	1	1	?	?		1				....
134. <i>C. cerastioides</i> (L.) Britton.....							1	1	1	....
135. <i>Stellaria longipes</i> Goldie and f. <i>humilis</i> (Fenzl) Ostenfeld and var. <i>subvestita</i> (Greene) Polunin	1	1	1	1	1	1	1	1	1	1
136. <i>S. borealis</i> Bigel.....							1			....
137. <i>S. crassifolia</i> Ehrh.....					1		1	1	1	1
138. <i>S. humifusa</i> Rottb.....	1	1	1	1	1	1	1	1	1	1
139. <i>Arenaria peploides</i> L. and var. <i>diffusa</i> Hornem.....			1	1	1		1	1	1	1
140. <i>A. humifusa</i> Wahlenb.....	1		1		1			1		....
141. <i>A. rubella</i> (Wahlenb.) Sm. and f. <i>epilis</i> (Fernald) Polunin.....	1	1	1	1	1	1	1	1	1	1
142. <i>A. Rossii</i> R. Br. and var. <i>Daethiana</i> Polunin.....	1	1	1			1			1	....
143. <i>A. uliginosa</i> Schleich. and f. <i>albina</i> Polunin.....			1		1			1	1	....
144. <i>A. sajanensis</i> Willd.....				1	1	1	1	1	1	....
145. <i>Sagina nodosa</i> (L.) Fenzl f. <i>bulbil- losa</i> Polunin.....					1					....
146. <i>S. saginoides</i> (L.) Dalla Torre.....						?	1		1	1
147. <i>S. caespitosa</i> (J. Vahl) Lange.....			?	1	1		1	1		....
148. <i>S. intermedia</i> Fenzl.....	1	1	1	1	1		1	1	1	1
149. <i>Anemone parviflora</i> Michx. var. <i>grandiflora</i> Ulbrich.....							1	1		....
150. <i>A. Richardsoni</i> Hook.....								1		....
151. <i>Ranunculus trichophyllus</i> Chaix var. <i>eradicatus</i> (Laestad.) Drew			1		1		1	1	1	1

[illegible]

	1	2	3	4	5	6	7	8	9	10
185. <i>S. cernua</i> L. and var. <i>exilioides</i> Polunin and f. <i>latibracteata</i> (Fernald and Weatherby) Polunin and f. <i>bulbillosa</i> Engler and Irmsch. and f. <i>ramosa</i> Gmel...	1	1	1	1	1	1	1	1	1	1
186. <i>S. caespitosa</i> L. and f. <i>uniflora</i> (R. Br.) Engler and Irmsch. and subsp. <i>exaratoidea</i> (Simmons) Engler and Irmsch.....	1	1	1	1	1	1	1	1	1	1
187. <i>S. stellaris</i> L. var. <i>comosa</i> Retzius.	1	1	1	1	1	1	1	1	1	1
188. <i>S. hieracifolia</i> Waldst. and Kit....	.....	1	1	1	.....	1	.....	.....	.....	.....
189. <i>S. nivalis</i> L. and var. <i>tenuis</i> Wahlenb. and f. <i>labradorica</i> (Fernald) Polunin.....	1	1	1	1	1	1	1	1	.....	1
190. <i>S. aizoides</i> L.....	1	.....	.....	.....	1	1	1	1	1	.....
191. <i>S. tricuspidata</i> Rottb. and f. <i>subintegrifolia</i> (Abrom.) Polunin..	1	1	1	1	1	1	.....	1	1	1
192. <i>S. flagellaris</i> Willd.....	1	1	.....	.....	.....	?	.....	.....	.....	.....
193. <i>S. Hirculus</i> L. and var. <i>propinqua</i> (R. Br.) Simmons.....	1	1	1	1	1	1	.....	1	1	1
194. <i>S. Aizoon</i> Jacq.....	.....	.....	1	1	1	.....	.....	.....	.....	.....
195. <i>S. oppositifolia</i> L. and f. <i>pulvinata</i> Andersson and Hesselman.....	1	1	1	1	1	1	1	1	1	1
196. <i>Chrysosplenium alternifolium</i> L. var. <i>tetrandrum</i> Lund.....	1	1	1	1	1	1	1	1	1	1
197. <i>Parnassia Kotzebuei</i> Cham. and Schl.....	.....	.....	.....	.....	1	.....	1	1	.....	.....
198. <i>P. palustris</i> L. var. <i>neogaea</i> Fernald.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
199. <i>Rubus Chamaemorus</i> L.....	.....	.....	.....	.....	1	.....	.....	1	1	1
200. <i>Potentilla Crantzii</i> (Cr.) Beck.....	.....	.....	.....	1	.....	.....	1	1	1	.....
201. <i>P. emarginata</i> Pursh and var. <i>typica</i> Abromeit and f. <i>tardiniæ</i> Polunin.....	1	1	1	1	1	1	1	1	1	1
202. <i>P. nivea</i> (s.l.) L. and var. <i>pallidior</i> Sw. and var. <i>subquinata</i> Lange.	?	.....	1	1	1	.....	1	1	1	1
203. <i>P. rubricaulis</i> Lehm.....	1	1	1	.....	.....	?	.....	.....	.....	.....
204. <i>P. Vahlia</i> Lehm.....	1	.....	1	1	.....	1	.....	1	1	1
205. <i>P. pulchella</i> R. Br. and var. <i>elatior</i> Lange.....	1	1	1	.....	1	1	.....	1	1	1
206. <i>P. Egedii</i> Wormskj. and var. <i>groenlandica</i> (Tratt.) Polunin..	.....	.....	.....	.....	1	.....	1	1	.....	1
207. <i>P. palustris</i> (L.) Scop.....	.....	.....	.....	.....	.....	.....	1	1	.....	1
208. <i>Sibbaldia procumbens</i> L.....	.....	.....	.....	?	1	.....	1	1	1	1
209. <i>Dryas integrifolia</i> M. Vahl and f. <i>intermedia</i> (Nathorst) Polunin and f. <i>canescens</i> (Simmons) Fernald.....	1	1	1	1	1	1	1	1	1	1
210. <i>Astragalus eucosmus</i> Robinson.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....
211. <i>A. alpinus</i> L.....	.....	.....	1	.....	1	1	1	1	1	1
212. <i>Oxytropis foliolosa</i> Hook.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....
213. <i>O. terrae-novae</i> Fernald.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
214. <i>O. hudsonica</i> (Greene) Fernald.....	.....	.....	.....	.....	.....	1	.....	.....	1	1
215. <i>O. Maydelliana</i> Trautv.....	.....	.....	1	.....	1	1	1	1	1	1
216. <i>O. arctobia</i> Bunge and var. <i>hyperarctica</i> Polunin.....	.....	.....	1	.....	1	1	.....	.....	1	1
217. <i>O. podocarpa</i> A. Gray.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
218. <i>O. Bellii</i> (Britton) Palibine.....	.....	.....	.....	.....	.....	1	.....	1	.....	1

	1	2	3	4	5	6	7	8	9	10
219. <i>Hedysarum Mackenzii</i> Richardson var. <i>pabulare</i> (A. Nelson) Polunin.....										1
220. <i>Callitriche verna</i> L. emend. Loennr. var. <i>minima</i> (Hoppe) Lange.....										1
221. <i>Empetrum nigrum</i> L. var. <i>hermaphroditum</i> (Lange) Soerensen..	1	1	1	1	1	1	1	1	1	1
222. <i>Epilobium angustifolium</i> L.....				1	1		1	1		
223. <i>E. latifolium</i> L. and f. <i>albiflorum</i> Nathorst.....	1	1	1	1	1	1	1	1	1	1
224. <i>E. palustre</i> L.....										1
225. <i>E. davuricum</i> Fischer var. <i>arcticum</i> (Samuelsson) Polunin.....			1		1			1	1	1
226. <i>E. anagallidifolium</i> Lam.....					?		1		1	
227. <i>Hippuris vulgaris</i> L. and var. <i>maritima</i> (Hell.) Wahlenb.....			1	1	1		1	1	1	1
228. <i>Pyrola secunda</i> L. var. <i>obtusata</i> Turcz.....										1
229. <i>P. grandiflora</i> Radius.....	1		1	1	1	1	1	1	1	1
230. <i>Ledum palustre</i> L. var. <i>decumbens</i> Ait.....			1	1	1	1	1	1	1	1
231. <i>Rhododendron lapponicum</i> (L.) Wahlenb.....		1	1	1	1	1		1	1	1
232. <i>Loiseleuria procumbens</i> (L.) Desv.....				1	1	1		1		1
233. <i>Phyllodoce coerulea</i> (L.) Bab.....				1	1		1	1		
234. <i>Cassiope tetragona</i> (L.) D. Don....	1	1	1	1	1	1	1	1	1	1
235. <i>C. hypnoides</i> (L.) D. Don.....				1	1		1	1	1	
236. <i>Andromeda Polifolia</i> L.....								1		1
237. <i>Arctostaphylos alpina</i> (L.) Spreng.....				1	1	1	1	1	1	1
238. <i>A. rubra</i> (Rehder and Wilson) Fernald.....									1	1
239. <i>Vaccinium uliginosum</i> L. var. <i>alpinum</i> Bigel. and var. <i>alpinum</i> f. <i>Langeanum</i> (Malte) Polunin.	1	1	1	1	1	1	1	1	1	1
240. <i>V. Vitis-Idaea</i> L. var. <i>minor</i> Lod- diges.....				1	1	1	1	1	1	1
241. <i>Diapensia lapponica</i> L.....	1			1	1		1	1	1	1
242. <i>Primula stricta</i> Hornem.....								1		
243. <i>P. egaliksensis</i> Wormskj. and f. <i>violacea</i> Fernald.....								1		1
244. <i>Androsace septentrionalis</i> L.....	1		1							
245. <i>Armeria labradorica</i> Wallr. f. <i>glabrisca</i> (Blake) Malte and f. <i>pubisca</i> (Blake) Malte....	1	1	1	1	1	1	1	1	1	1
246. <i>Lomatogonium rotatum</i> (L.) Griseb.....										?
247. <i>Mertensia maritima</i> (L.) S. F. Gray var. <i>tenella</i> Fries.....		1	1	1	1	1	1	1	1	1
248. <i>Veronica alpina</i> L. and var. <i>unalaschensis</i> Cham. and Schl....					1		1	1	1	
249. <i>Castilleja pallida</i> s.l. (L.) Spreng. and var. <i>septentrionalis</i> (Lindl.) A. Gray.....					1					1
250. <i>Euphrasia arctica</i> Lange var. <i>minutissima</i> Polunin.....				1	1		1	1		
251. <i>Bartsia alpina</i> L.....					1		?	1	1	
252. <i>Rhinanthus groenlandicus</i> Chabert.....							1			1
253. <i>Pedicularis groenlandica</i> Retz.....				1	1			1	1	1
254. <i>P. lapponica</i> L.....					1		1			
255. <i>P. labradorica</i> Wirsing.....						1				
256. <i>P. sudetica</i> Willd.....		1	1	1		1			1	1

	1	2	3	4	5	6	7	8	9	10
257. <i>P. lanata</i> Cham. and Schl.....	1	1	1	1	1	1	....	1	1	1
258. <i>P. Langsdorfii</i> Fisch. var. <i>arctica</i> (R. Br.) Polunin.....	1	1	1	....	?	?	....	....	....	....
259. <i>P. hirsuta</i> L.....	1	1	1	1	1	1	1	1	1	1
260. <i>P. flammea</i> L. and f. <i>flavescens</i> Polunin.....	....	1	1	1	1	1	1	1	1	1
261. <i>P. capitata</i> Adams.....	1	1	1	....	1	1	....	....	1	....
262. <i>Pinguicula vulgaris</i> L.....	....	....	....	....	1	....	....	....	....	....
263. <i>Plantago juncoides</i> Lam. var. <i>glauca</i> (Hornem.) Fernald.....	....	....	....	....	1	....	....	....	1	....
264. <i>Campanula uniflora</i> L.....	1	1	1	1	1	1	1	1	1	1
265. <i>C. rotundifolia</i> (s.l.) L.....	....	....	....	1	....	....	1	1	....	....
266. <i>Solidago macrophylla</i> Pursh var. <i>thyrsoides</i> (E. Meyer) Fernald.....	....	....	....	....	....	....	1	....	....	....
267. <i>S. multiradiata</i> Ait.....	....	....	....	....	1	....	1	....	....	....
268. <i>Erigeron eriocephalus</i> J. Vahl.....	1	....	1	1	1	1	1	1	1	1
269. <i>E. unalaschkensis</i> (DC.) Vierhap- per.....	....	....	....	1	1	1	1	1	1	1
270. <i>E. compositus</i> Pursh.....	1	....	....	....	....	....	....	....	....	....
271. <i>Antennaria angustata</i> Greene.....	....	....	1	1	1	....	1	1	1	1
272. <i>A. canescens</i> (Lange) Malte.....	....	....	....	1	1	....	1	1	....	?
273. <i>A. labradorica</i> Nutt.....	?	1	1	1	1	1	1	1	1	1
274. <i>A. burwellensis</i> Malte.....	....	....	....	....	....	....	1	....	....	....
275. <i>A. compacta</i> Malte.....	....	....	....	1	1	....	1	1	....	....
276. <i>A. nitens</i> Greene.....	....	....	....	....	....	....	....	....	....	1
277. <i>A. pygmaea</i> Fernald.....	....	....	....	....	....	?	1	....	....	....
278. <i>A. arenicola</i> Malte.....	....	....	....	....	....	....	....	....	....	1
279. <i>A. isolepis</i> Greene.....	....	....	....	....	....	....	1	....	....	1
280. <i>A. Tweedsmuirii</i> Polunin.....	....	....	....	....	1	....	....	1	....	....
281. <i>A. Tansleyi</i> Polunin.....	....	....	....	....	1	....	....	1	1	1
282. <i>Gnaphalium supinum</i> L.....	....	....	....	....	....	....	1	....	....	....
283. <i>G. norvegicum</i> Gunn.....	....	....	....	?	....	....	....	....	....	....
284. <i>Matricaria inodora</i> L. var. <i>nana</i> (Hook.) Torr. and Gray emend. Polunin.....	....	....	1	....	1	1	....	1	1	1
285. <i>Chrysanthemum arcticum</i> L.....	....	....	....	....	....	....	....	1	....	1
286. <i>C. integrifolium</i> Richardson.....	....	1	1	1	1	1	....	....	1	....
287. <i>Tanacetum huronense</i> Nutt. var. <i>terrae-novae</i> Fernald and var. <i>bifarium</i> Fernald.....	....	....	....	....	....	....	....	1	....	....
288. <i>Artemisia borealis</i> Pall. and var. <i>Purshii</i> Besser.....	....	....	....	1	1	....	....	1	....	1
289. <i>Petasites sagittatus</i> (Pursh) A. Gray.....	....	....	....	....	....	....	....	....	1	....
290. <i>Arnica alpina</i> s.l. (L.) Olin and var. <i>angustifolia</i> (Vahl) Fernald.....	1	1	1	1	1	1	1	1	....	....
291. <i>Senecio palustris</i> (L.) Hook. and var. <i>congestus</i> (R. Br.) Hook. and f. <i>polycricos</i> Polunin.....	....	?	1	1	1	1	....	1	1	1
292. <i>Taraxacum phymatocarpum</i> (s.l.) J. Vahl.....	1	1	1	....	1	1	....	....	....	....
293. <i>T. ceratophorum</i> (Ledeb.) DC.....	....	....	....	....	1	....	....	?	....	....
294. <i>T. lacerum</i> (s.l.) Greene.....	....	....	1	1	1	1	1	1	1	1
295. <i>T. lapponicum</i> Kihlman.....	....	....	....	?	1	....	1	....	1	....
296. <i>T. torngatense</i> Fernald.....	....	....	....	....	....	....	1	....	....	....
297. <i>Crepis nana</i> Richardson.....	....	....	1	1	....	1	....	....	1	....
297. TOTAL.....	115	111	143	153	205	116	172	202	178	177
	+	+	+	+	+	+	+	+	+	+
	2?	5?	4?	12?	5?	10?	4?	5?	8?	3?

SUMMARY OF FAMILIES

	Species		Species
Polypodiaceae.....	6	Rosaceae.....	11
Equisetaceae.....	3	Leguminosae.....	10
Lycopodiaceae.....	2	Callitrichaceae.....	1
Potamogetonaceae.....	2	Empetraceae.....	1
Gramineae.....	40	Onagraceae.....	5
Cyperaceae.....	38	Hippuridaceae.....	1
Juncaceae.....	10	Pyrolaceae.....	2
Liliaceae.....	2	Ericaceae.....	11
Orchidaceae.....	1	Diapensiaceae.....	1
Salicaceae.....	14	Primulaceae.....	3
Betulaceae.....	2	Plumbaginaceae.....	1
Polygonaceae.....	3	Gentianaceae.....	1
Portulacaceae.....	1	Boraginaceae.....	1
Caryophyllaceae.....	24	Scrophulariaceae.....	14
Ranunculaceae.....	15	Lentibulariaceae.....	1
Papaveraceae.....	1	Plantaginaceae.....	1
Cruciferae.....	18	Campanulaceae.....	2
Crassulaceae.....	1	Compositae.....	32
Saxifragaceae.....	15		

Total—37 families and 297 species

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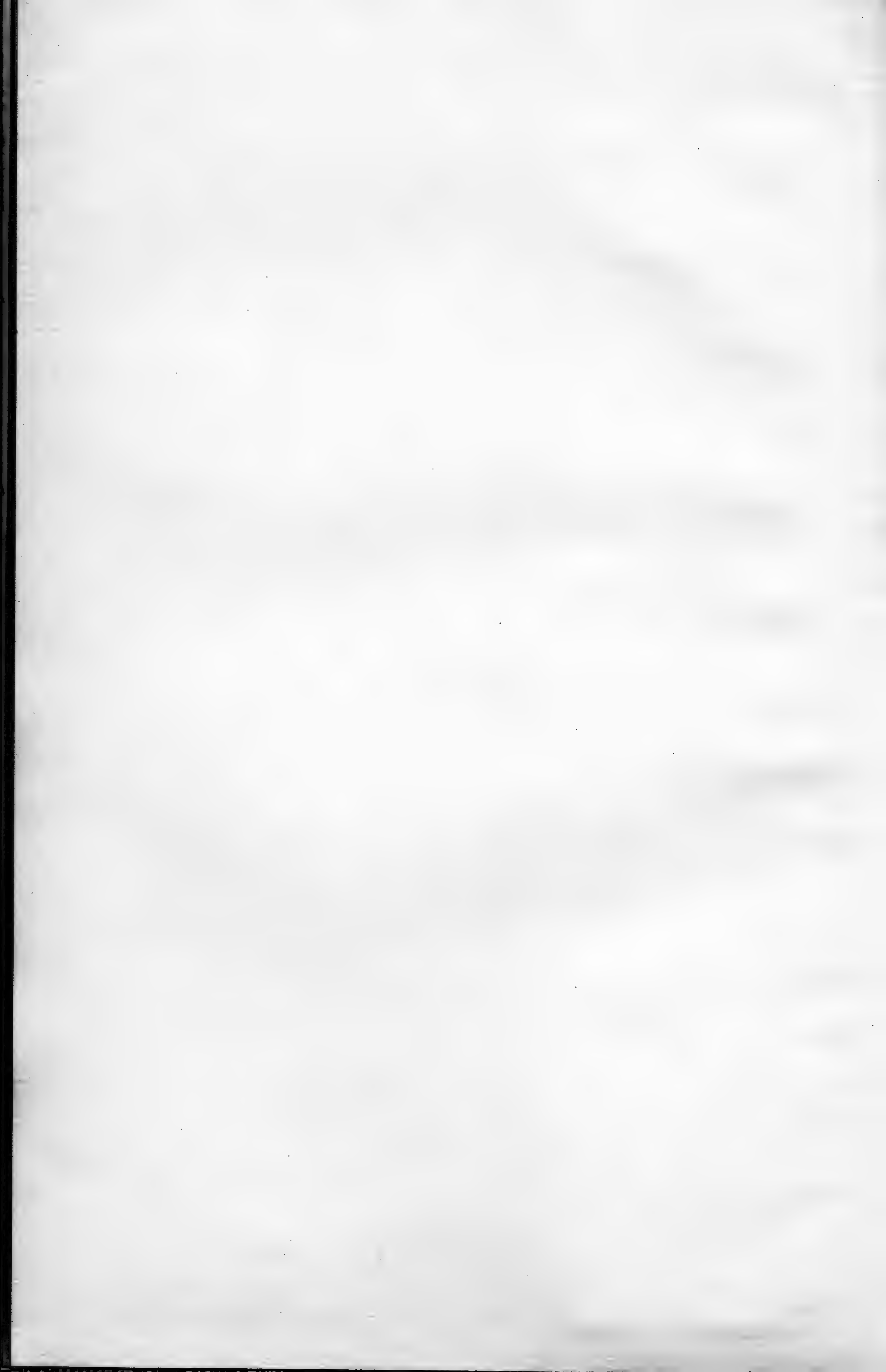
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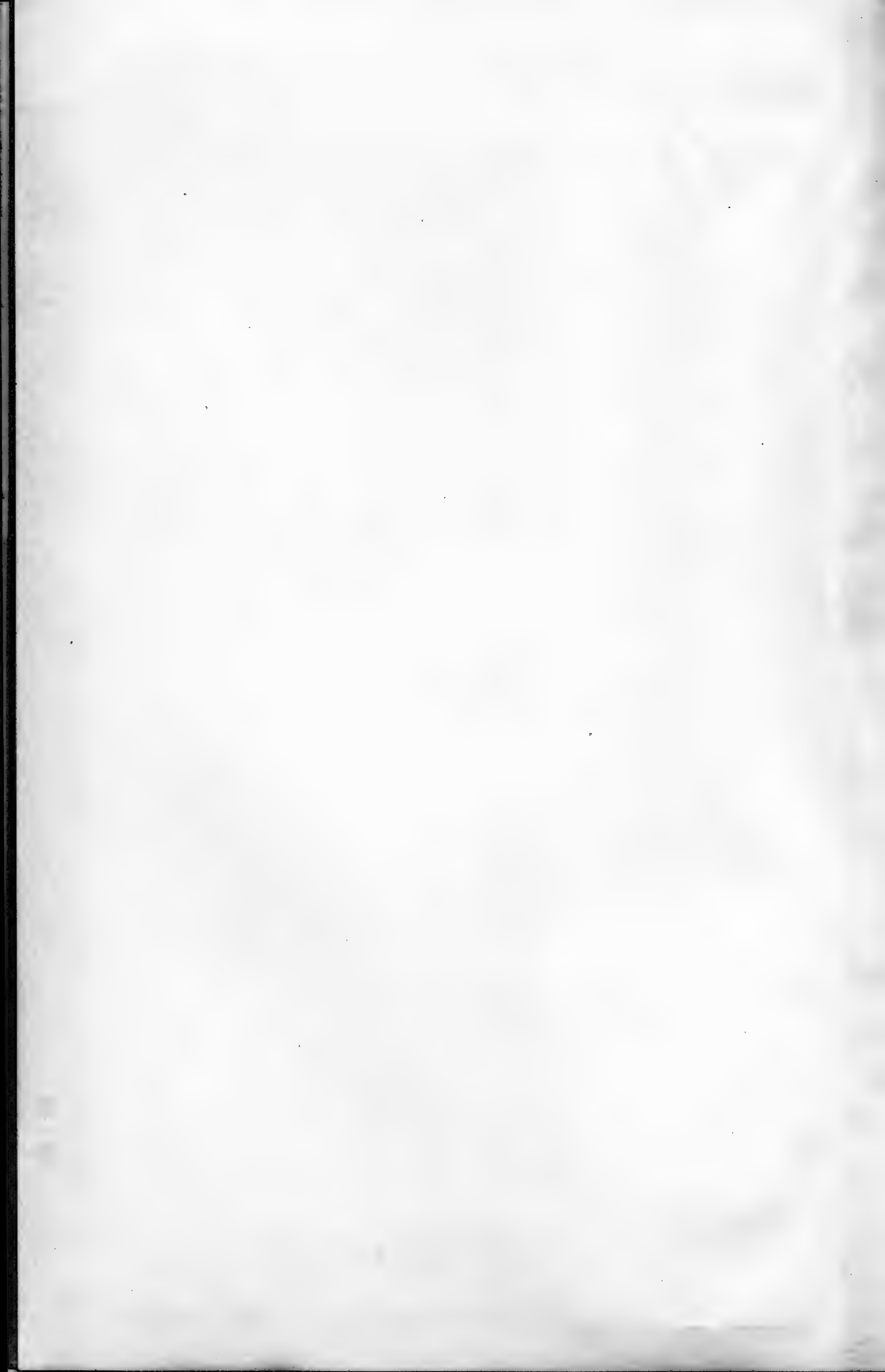
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